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Water Resources Data for Montana

Water Year 1974

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-74-2

Prepared in cooperation with the State of Montana
with other

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U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-74-2

Prepared in cooperation with the State of Montana
and with other agencies

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Bureau of Reclamation, U.S. Department of the Interior
Bureau of Indian Affairs, U.S. Department of the Interior
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Environmental Protection Agency

Water resources records, 1974, for Montana are in the following reports of the U.S. Geological Survey

1. Water Resources Data for Montana
   Part 1. Surface Water Records

2. Water Resources Data for Montana
   Part 2. Water Quality Records

Copies of this report may be obtained from
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1975

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WATER RESOURCES DATA FOR MONTANA, 1974

Part 2. Water Quality Records

INTRODUCTION

Water resources data for the 1974 water year for Montana include records of data for the chemical and physical characteristics of surface water. Data on the quality of surface water (chemical, temperature, and sediment) were collected from designated sampling sites at predetermined intervals such as once daily, weekly, monthly or less frequently. Records are given for 55 sampling stations of which 51 are continuous record stations, 1 is a partial-record station, and 3 are miscellaneous sites. Locations of surface water-quality stations are shown in figure 1. A few pertinent stations (not included above) in bordering States are also included. The records were collected by the Water Resources Division of the U.S. Geological Survey under the direction of George M. Pike, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

The Geological Survey has published records of chemical quality, water temperatures, and sediment since 1941 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Beginning with the 1964 water year, water-quality records have been released by the Geological Survey in annual reports on a State-boundary basis. These reports are for limited distribution and are designed primarily for rapid release of data shortly after the end of the water year. These records will be published later in Geological Survey water-supply papers.

COOPERATION

This report was prepared by the U.S. Geological Survey under cooperative agreement with the following organization:

1. Montana Department of Fish and Game, W. R. Woodgerd, Director.

Agencies furnishing assistance were:

1. Some of the records were obtained at the request of other federal agencies as a part of the program of the U.S. Department of the Interior for the development of the Missouri River basin.
2. Corps of Engineers, U.S. Army.
3. Environmental Protection Agency.

DEFINITION OF TERMS

Terms related to water-quality and hydrologic data, as used in this report are defined below. See also table for converting English units to International System of units (SI) on page 15.

Acre-foot (AC-FT, ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacteria growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacteria growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the shifting portion of fragmented alluvial material of which the streambed is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per litre, used for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the weight per unit area or volume of habitat.

Ash weight is the weight or amount of residue present after the residue from the dry weight determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash weight values of zooplankton and phytoplankton are expressed in g/m^3 (grams per cubic metre), and periphyton and benthic organisms in g/m^2 (grams per square metre).

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic metres. It represents a runoff of approximately 0.0372 inches from 1 square mile or 0.3468 millimetre from 1 square kilometre.

Chemical oxygen demand (COD) indicates the quantity of oxidizable compounds in water and varies with water composition(s), temperature, period of contact, and other factors.

Chlorophyll refers to the green pigments of plants. Chlorphyll *a* and *b* are the two most common green pigments in plants.

Cubic foot per second (CFS,cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic metres per second.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a given time.

Drainage area of a stream at a specified location is that area, measured in horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface stream and bodies of impounded surface water.

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrogen-ion concentration (pH) indicates the degree of acidity or alkalinity of water and is expressed in terms of pH units. The pH value of a solution is the negative logarithm of the concentration of hydrogen ions, in moles per litre.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per litre (UG/L,ug/l) is a unit expressing the concentration of chemical constituents in solution as weight (micrograms) of solute per unit volume (litre) of water. One thousand micrograms per litre is equivalent to one milligram per litre.

Milligrams per litre (MG/L,mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per litre represents the weight of solute per unit volume of water. Milligrams or micrograms per litre may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per litre by multiplying by the factors in table 1 , page 9. Concentration of suspended sediment also is expressed in mg/l, and is based on the weight of sediment per litre of water-sediment mixture. Sediment concentrations may be converted to parts per million by using the factors in table 2 , page 9 .

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multi-celled and are counted according to the number of contained cells per sample volume, usually millilitres (ml) or litres (l).

Partial-record station is a particular site where limited streamflow or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimetres (mm), of suspended sediment or bed material determined either by sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation.
Silt	.004 - .062	Sedimentation.
Sand	.062 - 2.0	Sedimentation or sieve.
Gravel	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Primary production is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg(C/m^2)/time for periphyton and macrophytes and mg(C/m^3)/time for phytoplankton] are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Sediment is solid material that originates mostly from disintegrated rocks and is transformed by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per litre of water-sediment mixture (mg/l).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimetre at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. Commonly, the amount of dissolved solids (in milligrams per litre) is about 65 percent of the specific conductance (in micromhos per cm at 25°C). This relation is not constant from stream to stream or from well to well, and it may even vary in the same source with changes in the composition of the water.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The use of artificial substrates simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the location of the thermograph or a digital mechanism that automatically records water temperature on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per litre by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir. See also table for converting English Units to International Units (SI) on page 15.

SPECIAL NETWORKS AND PROGRAMS

Some of the stations for which data are published in this report are included in special networks and programs. These stations are identified by their title, set in parentheses, under the station name.

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

International Hydrological Decade (IHD) River Stations provide a general index of runoff and materials in the water balance (discharge of water, and dissolved and transported solids) of the world. In the United States, IHD Stations provide indices of runoff and the general distribution of water in the principal river basins of the conterminous United States and Alaska.

National stream-quality accounting network is an accounting network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of water-quality conditions nationwide on a year-to-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where additional monthly samples are collected to determine the concentration and distribution of pesticides in streams whose waters are used for irrigation or in streams in areas where potential contamination could result from the application of the commonly used insecticides and herbicides.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides includes insecticides, miticides, fungicides, herbicides, and rodenticides. Since the first application of DDT as an insecticide in the early 1930's, there have been almost 60,000 pesticide formulations registered, each containing at least one of the approximately 800 different basic pesticide compounds. The United States annually produces about 1 billion pounds of these compounds. Although efforts are being made to substitute many of the chorinated hydrocarbon pesticides with more specific, fast-acting, and easily degradable compounds, chorinated hydrocarbon pesticides are still commonly used in many areas of the country.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected monthly or twice a year (at high and low flow) to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Radioisotopes are isotope forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus. For example: Ordinary chlorine is a mixture of isotopes having atomic weights 35 and 37, with the natural mixture having atomic weight about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron (Rose, 1966). There are 275 isotopes of the 81 stable elements in addition to over 800 radioactive isotopes.

Radioisotopes that are determined in this program are natural uranium in ug/1 (micrograms per litre), radium as radium - 226 in PC/L, (pCi/1, picocuries per litre), gross beta radiation as equivalent strontium/yttrium-90 or cesium-137 in PC/L, and gross alpha radiation as micrograms of uranium eqivalent per litre (ug/1). Gross alpha and beta radioactivity associated with the fine grained (silt and clay sized) sediments in the samples are also determined.

A picocurie (PC,pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

DOWNSTREAM ORDER AND STATION NUMBER

Stations are listed in downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each water-quality station, gaging station, and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record and continuous-record stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station, such as 06090800 which appears just to left of the station name includes the 2-digit part number "06" plus the 6-digit downstream order number "090800." In this report, the records are listed in downstream order by parts. The part number refers to an area whose boundaries coincide with certain natural drainage lines. Records in this report are in Part 6 (Missouri River basin) and Part 12 (Upper Columbia River basin). All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

EXPLANATION OF WATER QUALITY DATA

Collection and examination of data

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads. Discharge records for streams in Montana have been released in the report, "Water Resources Data for Montana, 1974, Part 1. Surface Water Record."

The data in this report include a description of the sampling station and tabulations of the samples analyzed. The description of the sampling station gives the location, drainage area, periods of record for the various water-quality data, extremes of the pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations.

Table 1. Factors for conversion of chemical constituents in milligrams or micrograms per liter to milliequivalents per liter.

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*........	0.11119	Hydroxide (OH^{-1})......	0.05880
Ammonia as NH_4^{+1}........	.05544	Iodide (I^{-1})...........	.00788
Barium (Ba^{+2})*..........	.01456	Iron (Fe^{+3})*...........	.05372
Beryllium (Be^{+3})*.......	.33288	Lead (Pb^{+2})*...........	.00965
Bicarbonate (HCO_3^{-1})....	.01639	Lithium (Li^{+1})*.......	.14411
Bromide (Br^{-1})..........	.01251	Magnesium (Mg^{+2})......	.08226
Cadmium (Cd^{+2})*.........	.01779	Manganese (Mn^{+2})*.....	.03640
Calcium (Ca^{+2})..........	.04990	Nickel(Ni^{+2})*.........	.03406
Carbonate (CO_3^{-2}).......	.03333	Nitrate (NO_3^{-1}).......	.01613
Chloride (Cl^{-1}).........	.02821	Nitrite (NO_2^{-1}).......	.02174
Chromium (Cr^{+6})*........	.11539	Phosphate (PO_4^{-3}).....	.03159
Cobalt (CO^{+2})*..........	.03394	Potassium (K^{+1}).......	.02557
Copper (Cu^{+2})*..........	.03148	Sodium (Na^{+1}).........	.04350
Cyanide (CN^{-1})..........	.03844	Strontium (Sr^{+2})*.....	.02283
Fluoride (F^{-1})..........	.05264	Sulfate (SO_4^{-2}).......	.02082
Hydrogen (H^{+1})..........	.99209	Zinc (Zn^{+2})*..........	.03060

* Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per liter to parts per million*
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39
8.05- 24	1.01	218-232	1.14	227-440	1.27	636-650	1.40
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50
186 -200	1.12	395-409	1.25	604-617	1.38		

*Based on water density of 1.000 g/ml and a specific gravity of sediment of 2.65.

Water-quality information is presented for chemical, biological, and microbiological quality, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium-adsorption-ratio, specific conductance, and pH. The biological information includes qualitative and quantitative analyses of plankton. Microbiological information includes quantitative indentification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations except for stations where a continuous temperature recorder (thermograph) furnishes information from which daily minimums and maximums are obtained. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentrations of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit (°F). In October 1967, the U.S. Geological Survey began reporting data for chemical constituents and concentrations of suspended sediment in milligrams per litre (mg/l) and water temperatures in degrees Celsius (°C). In waters with a density of 1.000 g/ml (grams per millilitre), parts per millions and milligrams per litre can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per litre. Temperature reported in degrees Celcius may be converted to degrees Fahrenheit by using the table below.

Table 3.--Degrees Fahrenheit (°F) to degrees Celsius (°C)*
(Temperature reported to nearest 0.5°C)

°F	°C	°F	°C	°F	°C	°F	°C	°F	°C
32	0.0	50	10.0	68	20.0	86	30.0	104	40.0
33	.5	51	10.5	69	20.5	87	30.5	105	40.5
34	1.0	52	11.0	70	21.0	88	31.0	106	41.0
35	1.5	53	11.5	71	21.5	89	31.5	107	41.5
36	2.0	54	12.0	72	22.0	90	32.0	108	42.0
37	3.0	55	13.0	73	23.0	91	33.0	109	43.0
38	3.5	56	13.5	74	23.5	92	33.5	110	43.5
39	4.0	57	14.0	75	24.0	93	34.0	111	44.0
40	4.5	58	14.5	76	24.5	94	34.5	112	44.5
41	5.0	59	15.0	77	25.0	95	35.0	113	45.0
42	5.5	60	15.5	78	25.5	96	35.5	114	45.5
43	6.0	61	16.0	79	26.0	97	36.0	115	46.0
44	6.5	62	16.5	80	26.5	98	36.5	116	46.5
45	7.0	63	17.0	81	27.0	99	37.0	117	47.0
46	8.0	64	18.0	82	28.0	100	38.0	118	48.0
47	8.5	65	18.5	83	28.5	101	38.5	119	48.5
48	9.0	66	19.0	84	29.0	102	39.0	120	49.0
49	9.5	67	19.5	85	29.5	103	39.5	121	49.5

*C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per litre instead of milligrams per litre. (See "Definitions of Terms," p. 2 and table for converting English units to SI units, p. 15).

Solutes

Most methods for collecting and analyzing water samples to determine the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman. The method for determining elemental constituents by emission spectrographic techniques is described by Barnett and Mallory. Analysis of pesticides, herbicides, and organic substances in water are described by Goerlitz and Lamar, Lamar, Goerlitz, and Law, and Goerlitz and Brown. The collection and analysis of aquatic, biological and microbiological samples are described by Slack and others.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between the reported pH value and the relative abundance of carbon dioxide species (carbonate and bicorbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicorbonate in the laboratory.

The daily chemical quality data in this report generally represent equal-volume composites for 2- to 30-day periods; the composite periods are selected on the basis of specific conductance of the daily samples and fluctuation of water discharge.

Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for surface-water stations. For daily stations, the water temperatures are taken at about the same time each day when sample is collected. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature.

At stations where continuously recording thermographs are present, the records consist of maximum and minimum temperatures for each day and the monthly averages.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross-section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the sub-divided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the sub-divided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

WATER-SUPPLY PAPERS

The annual series of water-supply papers that give information on quality of surface waters in Montana are shown in the following table. Data for Hudson Bay and Missouri River basins are given in parts 5-6 and for Upper Columbia River basin are given in part 12.

Table 4.--Water-supply paper numbers and parts, water years, 1947-71

Year	Parts 5-6	Part 12	Year	Parts 5-6	Part 12
1947	1102	----	1958	1572	1574
1948	1132	----	1959	1643	1645
1949	1162	----	1960	1743	1745
1950	1187	----	1961	1883	1885
1951	1198	1200	1962	1943	1945
1952	1251	1253	1963	1949	1951
1953	1291	1293	1964	1956	1959
1954	1351	1353	1965	1963	1966
1955	1401	1403	1966	1993	1996
1956	1451	1453	1967	2013	2016
1957	1521	1523	1968	2095	2100
			1969	2145	2150
			1970	A2155	A2160
			1971	A2165	A2170

A In press.

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Table 5.--*Factors for converting English units to metric units* (International System (SI) units)

The following factors may be used to convert the English units published herein to metric units. Subsequent reports will contain both the English and metric unit equivalents in the station manuscript descriptions until such time that all data will be published in metric units.

Multiply English units	By	To obtain metric units
	Length	
inch (in.)	2.54	centimetre (cm)
	25.4	millimetre (mm)
	.0254	metre (m)
foot (ft)	.3048	metre (m)
yard (yd)	.9144	metre (m)
rod	5.0292	metre (m)
mile (mi)	1.609	kilometre (km)
	Area	
acre	4047	square metre (m^2)
	.4047	*hectare (ha)
	.4047	square hectometre (hm^2)
	.004047	square kilometre (km^2)
square mile (mi^2)	2.590	square kilometre (km^2)
	Volume	
gallon (gal)	3.785	**litre (l)
	3.785	cubic decimetre (dm^3)
	3.785×10^{-3}	cubic metre (m^3)
million gallons (10^6 gal)	3785	cubic metre (m^3)
	3.785×10^{-3}	cubic hectometre (hm^3)
cubic foot (ft^3)	28.32	cubic decimetre (dm^3)
	.02832	cubic metre (m^3)
cubic foot per second-day (ft^3/s-day)	2447	cubic metre (m^3)
	2.447×10^{-3}	cubic hectometre (hm^3)
acre-foot (acre-ft)	1233	cubic metre (m^3)
	1.233×10^{-3}	cubic hectometre (hm^3)
	1.233×10^{-6}	cubic kilometre (km^3)
	Flow	
cubic foot per second (ft^3/s)	28.32	litre per second (l/s)
	28.32	cubic decimetre per second (dm^3/s)
	.02832	cubic metre per second (m^3/s)
gallon per minute (gpm)	.06309	litre per second (l/s)
	.06309	cubic decimetre per second (dm^3/s)
	6.309×10^{-5}	cubic metre per second (m^3/s)
million gallons per day (mgd)	43.81	cubic decimetre per second (dm^3/s)
	.04381	cubic metre per second (m^3/s)
	Mass	
ton (short)	907.2	kilogram (kg)
	.9072	tonne (t)

*The unit hectare is approved for use with the International System (SI) for a limited time. See NBS Special Bulletin 330, p. 15, 1972 edition.

**The unit litre is accepted for use with the International System (SI). See NBS Special Bulletin 330, p. 13, 1972 edition.

PART 6. MISSOURI RIVER BASIN

MISSOURI RIVER MAIN STEM

06016000 BEAVERHEAD RIVER AT BARRETTS, MT.

LOCATION.--Lat 45°06'59", long 112°44'59", in SW¼SE¼ sec.19, T.8 S., R.9 W., Beaverhead County, at private road bridge 800 ft (244 m) upstream from Barretts, 1 mi (1.6 km) downstream from gaging station, 2.5 mi (4.0 km) downstream from Grasshopper Creek, and 8 mi (12.9 km) southwest of Dillon.

DRAINAGE AREA.--2,737 mi² (7,089 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: November 1949 to September 1951 (monthly), July 1965 to September 1974 (daily).
Water temperatures: July 1965 to September 1974.
Sediment records: May 1949 to September 1951.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 383 mg/l Jan. 1-31; minimum, 299 mg/l June 1-30.
Hardness: Maximum, 270 mg/l Jan. 1-31, Feb. 1-28; minimum, 220 mg/l Mar. 16-31, June 1-30.
Specific conductance: Maximum daily, 614 micromhos Jan. 6; minimum daily, 422 micromhos Mar. 18.
Water temperatures: Maximum, 21.0°C July 28, 29, Aug. 1, 4, 5; minimum, freezing point Jan. 1, 4, 5, 9, 11.

Period of record:
Dissolved solids: Maximum, 466 mg/l Jan. 14, 31, 1967; minimum, 260 mg/l June 1-30, 1972.
Hardness: Maximum, 316 mg/l Jan. 1-31, 1967; minimum, 170 mg/l June 2-30, 1967.
Specific conductance: Maximum daily, 733 micromhos Jan. 24, 1967; minimum daily, 353 micromhos June 8, 1967.
Water temperatures: Maximum, 21.0°C on several days during 1970 and 1974; minimum, freezing point on several days during winter periods most years.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. The computations of tons per day of dissolved solids refer to flow past the gaging station. Some regulation by Lima Reservoir and nearly complete regulation by Clark Canyon Reservoir. Many diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	222	--	17	0	63	22	25	4.5	242	0	95
NOV.												
01-30	--	188	--	18	10	60	21	24	4.1	221	0	100
DEC.												
01-31	--	207	--	18	10	63	23	24	4.4	235	0	94
JAN.												
01-31	--	230	--	19	10	68	24	23	4.5	247	0	110
FEB.												
01-28	--	208	--	18	80	70	24	24	4.4	260	0	100
MAR.												
01-15	--	290	--	19	20	67	23	24	4.3	247	0	98
16-31	--	383	--	18	40	59	19	22	4.9	210	0	86
APR.												
01-30	--	497	--	17	10	58	20	21	4.5	225	3	69
MAY												
02-30	--	915	--	16	0	57	22	22	4.2	237	0	82
JUNE												
01-30	--	975	--	17	20	54	21	19	4.1	224	0	63
JULY												
01-31	--	858	--	19	20	56	25	22	4.0	236	1	60
AUG.												
01-31	--	687	--	19	10	59	20	22	3.9	241	--	76
SEP.												
01-30	--	403	--	18	10	62	23	25	3.1	233	--	84
WTD. AVG.	--	--	--	18	16	59	22	22	4.1	235	1	79
TIME WTD. AVG.	--	483	--	18	17	61	22	23	4.2	236	0	86
TOT. LOAD (TONS)	--	--	--	8400	7	27900	10400	10400	1950	111000	193	37500

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
31...	1415	198	9.0	17	60	64	22	25	4.7	231	4	90
JAN.												
31...	1515	267	4.5	19	140	70	24	24	4.4	259	0	100
MAY												
01...	1330	822	11.0	16	40	61	22	21	4.0	241	0	79
JUNE												
27...	1200	1160	15.0	17	90	57	21	21	4.3	233	0	71

06016000 BEAVERHEAD RIVER AT BARRETTS, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	SODIUM AD- SORP- TION RATIO	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)
OCT.												
01-31	12	.5	.02	.03	350	.49	215	250	49	.7	585	8.3
NOV.												
01-30	12	.5	.02	.01	349	.47	177	240	55	.7	545	8.2
DEC.												
01-31	12	.4	.04	.01	355	.48	198	250	59	.7	570	8.1
JAN.												
01-31	12	.6	.10	.01	383	.52	230	270	66	.6	613	8.2
FEB.												
01-28	12	.6	.01	.02	381	.52	296	270	60	.6	620	8.1
MAR.												
01-15	11	.5	.07	.00	369	.50	289	260	59	.6	601	8.1
16-31	11	.4	.01	.01	326	.44	337	220	42	.6	534	7.8
APR.												
01-30	10	.4	.03	.01	314	.43	421	230	38	.6	533	8.4
MAY												
02-30	11	.4	.00	.00	331	.45	818	230	39	.6	540	8.2
JUNE												
01-30	9.7	.4	.00	.01	299	.41	787	220	38	.6	494	8.2
JULY												
01-31	9.9	.4	.00	.01	323	.44	748	240	40	.6	527	--
AUG.												
01-31	11	.4	.00	.01	330	.45	612	230	32	.6	547	--
SEP.												
01-30	11	.4	.03	.00	342	.47	372	250	58	.7	565	--
WTD. AVG.	11	.4	.01	.01	331	.45	--	237	45	.6	544	--
TIME WTD. AVG.	11	.5	.02	.01	343	.47	--	243	49	.6	559	--
TOT. LOAD (TONS)	5080	202	6.7	4.2	157000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	DIS- SOLVED SOLIDS (TONS PER DAY)	HARD- NESS (CA,MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	SODIUM AD- SORP- TION RATIO	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)
OCT.												
31...	12	.5	.06	.06	354	.48	189	250	54	.7	570	8.4
JAN.												
31...	12	.4	.14	.02	382	.52	275	270	61	.6	618	8.2
MAY												
01...	10	.4	.05	.02	333	.45	739	240	45	.6	560	8.3
JUNE												
27...	11	.4	.01	.02	318	.43	996	230	38	.6	533	7.9

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)
OCT.			
02...	1050	260	.01
31...	1410	198	.06
DEC.			
05...	0945	178	.01
JAN.			
08...	1405	256	.03
31...	1515	267	.07
FEB.			
26...	1040	282	.01
MAR.			
26...	1000	319	.03
MAY			
01...	1330	822	.04
30...	1900	1020	.02
JUNE			
27...	1200	1160	.05
AUG.			
01...	1145	981	.04
SEP.			
05...	1420	391	.03

06016000 BEAVERHEAD RIVER AT BARRETTS, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	574	544	528	597	591	600	530	---	495	522	528	560
2	550	544	528	597	589	593	539	536	494	520	526	516
3	580	565	553	---	589	576	547	536	486	518	526	530
4	568	565	---	595	591	588	547	531	479	520	537	532
5	568	555	553	601	591	577	536	---	471	520	542	568
6	582	555	565	614	591	591	---	532	469	523	544	580
7	582	536	547	592	599	595	536	540	469	524	537	549
8	582	565	547	576	599	586	536	540	469	519	537	555
9	582	522	559	600	599	591	526	531	470	517	534	546
10	575	522	549	600	599	597	511	531	490	519	528	567
11	586	522	556	600	599	597	508	522	496	518	---	568
12	578	538	546	600	599	597	502	531	---	511	545	572
13	578	534	566	602	599	576	520	530	496	507	539	---
14	568	517	558	602	599	---	528	542	486	516	531	540
15	568	527	557	592	599	581	528	542	485	527	540	533
16	559	527	561	587	593	541	508	535	470	520	527	558
17	574	515	561	550	593	439	508	535	---	518	520	558
18	574	536	561	581	590	422	510	542	463	520	558	562
19	568	526	558	592	590	505	494	---	463	---	543	579
20	575	566	581	591	---	575	519	532	470	529	519	565
21	568	555	580	597	599	550	528	542	486	526	520	573
22	574	566	574	597	601	561	---	544	486	524	527	541
23	574	566	574	597	594	580	528	543	494	529	520	550
24	574	558	581	597	594	572	519	543	487	528	539	565
25	572	554	571	599	600	572	519	541	494	529	510	550
26	572	---	577	599	600	559	519	513	504	529	520	541
27	560	554	592	599	598	515	519	529	503	528	537	556
28	560	554	580	599	598	467	522	520	504	522	537	552
29	551	---	578	599	---	531	527	502	513	525	545	545
30	542	554	578	590	---	540	530	494	513	530	---	559
31	563	---	538	603	---	560	---	---	---	530	550	---
MONTH	570	544	562	595	596	558	523	532	486	522	533	554
YEAR	MAX	614	MIN	422	MEAN	548						

TEMPERATURE (DEG. C) OF WATER . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	6.0	5.0	0.0	4.0	5.5	5.5	11.0	13.5	17.5	21.0	14.5
2	12.0	4.0	3.0	0.5	3.5	5.0	7.0	11.0	14.5	14.5	19.5	18.0
3	10.0	4.5	2.5	---	5.0	5.0	7.5	11.0	13.5	17.5	18.0	18.0
4	12.5	4.0	---	0.0	5.0	4.0	7.0	12.0	11.5	18.0	21.0	18.5
5	12.5	5.0	2.5	0.0	4.5	5.5	7.0	12.0	12.0	17.0	21.0	16.0
6	11.5	5.5	2.5	0.5	4.0	6.0	---	10.0	12.0	17.0	19.5	16.0
7	10.5	5.0	4.0	0.5	4.5	4.5	7.5	10.5	10.0	17.5	17.5	17.0
8	8.5	4.0	3.5	1.0	5.0	5.0	8.5	11.5	12.5	17.5	19.0	18.0
9	10.0	8.0	2.5	0.0	4.5	4.5	9.0	11.0	15.0	18.5	19.0	17.0
10	9.5	8.0	3.0	0.5	4.0	5.5	6.5	10.0	14.5	18.0	19.5	16.0
11	10.0	8.5	3.5	0.0	3.5	6.0	8.5	12.0	15.0	18.0	---	13.5
12	9.5	7.5	4.0	1.0	4.0	7.0	6.0	9.5	---	20.0	19.5	15.0
13	10.5	6.0	3.5	4.0	4.5	5.0	6.5	12.0	16.0	20.5	19.5	---
14	11.5	6.0	2.5	5.5	4.0	---	9.5	10.5	16.0	20.5	19.0	16.0
15	11.0	5.0	2.5	6.0	5.5	7.0	10.5	11.0	16.0	18.0	18.0	17.0
16	11.5	5.5	4.0	5.5	5.0	7.5	11.5	11.5	16.0	19.5	19.0	15.0
17	11.5	6.0	4.5	4.5	5.5	6.0	11.0	10.5	---	19.5	19.0	15.0
18	11.5	5.5	3.0	3.5	4.5	5.5	11.0	9.5	16.5	19.0	16.5	17.0
19	11.5	5.0	2.5	4.0	5.0	3.0	10.5	---	16.5	---	18.0	14.5
20	11.0	4.0	2.0	5.0	---	3.5	8.5	9.0	16.5	20.5	17.0	15.5
21	12.0	4.0	4.0	3.5	4.5	6.0	10.0	8.0	14.5	20.0	18.5	14.0
22	11.5	4.0	3.5	3.5	4.5	5.0	---	9.5	16.5	19.0	18.0	16.0
23	9.0	3.5	3.0	4.0	5.0	6.0	11.0	12.5	16.0	17.0	18.5	16.5
24	9.5	3.5	4.0	4.5	4.5	7.0	11.5	13.5	18.0	20.0	18.0	15.5
25	8.0	3.0	1.5	4.0	4.5	7.0	11.5	12.0	17.5	20.5	19.5	16.0
26	9.0	---	3.5	4.5	5.0	7.0	11.5	13.0	18.0	19.5	19.5	15.0
27	9.0	3.0	4.0	3.5	4.5	8.5	8.5	13.0	17.5	20.0	19.0	15.5
28	11.0	3.5	3.5	4.0	5.0	6.0	9.5	14.0	17.0	21.0	19.0	13.5
29	9.0	---	3.5	4.0	---	5.0	10.5	10.0	17.0	21.0	18.5	15.5
30	9.5	4.5	2.5	4.0	---	7.0	10.5	11.5	17.0	20.5	---	15.0
31	9.0	---	0.5	4.0	---	7.0	---	---	---	20.0	18.0	---
MONTH	10.5	5.0	3.0	3.0	4.5	6.0	9.0	11.0	15.0	19.0	19.0	16.0
YEAR	MAX	21.0	MIN	0.0	MEAN	10.0						

MISSOURI RIVER MAIN STEM

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT.

LOCATION.--Lat 45°23'01", long 112°27'07", in SW¼NW¼SE¼ sec.22, T.5 S., R.7 W., Madison County, at gaging station at bridge on State Highway 41, 11.5 mi (18.5 km) upstream from Ruby River, 12.7 mi (20.4 km) southwest of Twin Bridges, and 14.5 mi (23.3 km) northeast of Dillon.

DRAINAGE AREA.--3,619 mi² (9,373 km²).

PERIOD OF RECORD.--Chemical analyses: November 1949 to September 1951 (monthly), July 1962 to September 1974 (daily).
Water temperatures: July 1962 to September 1974.
Sediment records: July 1962 to September 1974 (discontinued).
Prior to October 1968, published as "at Blaine."

EXTREMES.--1973-74:
Dissolved solids: Maximum, 462 mg/l Sept. 21-30; minimum, 363 mg/l Apr. 16-30.
Hardness: Maximum, 310 mg/l Jan. 1-14, Sept. 21-30; minimum, 250 mg/l May 1-17.
Specific conductance: Maximum daily, 813 micromhos Aug. 20; minimum daily, 524 micromhos Mar. 16.
Water temperatures: Maximum, 23.0°C June 25, Aug. 4; minimum, freezing point on several days during December and January.
Sediment concentrations: Maximum daily, 365 mg/l Mar. 18; minimum daily, 10 mg/l Jan. 16, 24.
Sediment discharge: Maximum daily, 788 tons (715 tonnes) Mar. 18; minimum daily, 5.5 tons (5.0 tonnes) Sept. 29.

Period of record:
Dissolved solids: Maximum, 579 mg/l May 19-31, 1963; minimum, 332 mg/l Apr. 1-30, 1972.
Hardness: Maximum, 362 mg/l Sept. 1-30, 1966; minimum, 213 mg/l Mar. 19, 20, 1963.
Specific conductance: Maximum daily, 896 micromhos June 23, 1963; minimum daily, 433 micromhos May 23, 1969.
Water temperatures: Maximum, 25.5°C July 27, 1973; minimum, freezing point on several days during winter periods most years.
Sediment concentrations: Maximum daily, 670 mg/l June 8, 1964; minimum daily, 5 mg/l Sept. 22, 23, 1964, May 17, 18, 1973.
Sediment discharge: Maximum daily, 1,200 tons (1,090 tonnes) June 8, 1964; minimum daily, 1.6 tons (1.5 tonnes) July 28, 1968.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Hardness, 320 mg/l Mar. 30. Flow partly regulated by Lima and Clark Canyon Reservoirs. Many diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-15	--	364	--	23	0	68	28	33	7.0	266	0	130
16-31	--	358	--	21	0	69	26	30	6.2	265	0	120
NOV.												
01-30	--	396	--	22	0	70	25	29	5.8	257	0	120
DEC.												
01-16	--	350	--	23	0	67	26	28	5.5	253	0	100
17-31	--	379	--	23	0	74	25	27	5.5	272	0	110
JAN.												
01-14	--	272	--	24	10	78	28	27	5.7	279	0	120
15-30	--	420	--	23	10	75	25	26	5.6	267	0	110
FEB.												
01-28	--	444	--	22	0	75	26	26	5.7	276	0	110
MAR.												
01-13	--	480	--	22	10	70	25	26	5.1	261	0	110
15-31	--	608	--	22	100	67	22	25	5.4	249	0	99
APR.												
01-15	--	551	--	22	10	68	22	24	5.4	249	0	94
16-30	--	643	--	20	10	68	22	23	5.0	250	0	89
MAY												
01-17	--	283	--	21	20	58	26	27	5.6	236	0	110
18-31	--	273	--	24	20	68	28	32	7.3	264	0	120
JUNE												
01-15	--	194	--	26	20	61	31	35	7.8	247	0	120
16-30	--	144	--	26	30	65	32	34	8.5	255	0	120
JULY												
01-15	--	253	--	28	30	50	31	38	7.2	240	--	130
16-31	--	151	--	27	30	53	31	38	7.2	227	1	120
AUG.												
01-15	--	162	--	29	10	59	29	37	7.4	245	--	130
16-31	--	237	--	29	10	64	30	37	7.8	264	--	130
SEP.												
01-20	--	285	--	27	10	60	29	33	5.0	262	--	110
21-30	--	179	--	26	10	78	28	35	5.3	298	1	120
WTD. AVG.	--	--	--	23	16	68	26	29	5.9	259	0	111
TIME WTD. AVG.	--	346	--	24	15	67	27	30	6.2	258	0	114
TOT. LOAD (TONS)	--	--	--	7840	5	23100	8760	9700	2000	87600	11	37700

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
NOV.												
06...	1325	398	3.0	21	30	79	27	30	6.2	289	0	110
JAN.												
30...	1505	407	2.0	23	30	79	27	26	5.4	281	0	110
MAY												
02...	1200	555	9.0	18	30	69	23	23	4.9	262	0	91
JUNE												
30...	1400	179	17.0	23	20	77	31	32	7.1	296	0	120

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
01-15	20	.5	.25	.03	442	.60	434	290	67	.9	692	8.2
16-31	18	.6	.32	.03	423	.58	409	280	62	.8	671	8.2
NOV.												
01-30	16	.5	.42	.03	417	.57	446	280	67	.8	653	7.9
DEC.												
01-16	16	.5	.43	.01	393	.53	371	270	67	.7	645	8.1
17-31	15	.5	.44	.01	416	.57	426	290	65	.7	662	8.1
JAN.												
01-14	16	.6	.51	.01	439	.60	322	310	81	.7	696	8.3
15-30	15	.6	.50	.02	414	.56	469	290	71	.7	666	8.3
FEB.												
01-28	15	.7	.40	.02	418	.57	501	290	68	.7	666	8.1
MAR.												
01-13	14	.5	.25	.00	402	.55	521	280	64	.7	649	7.8
15-31	13	.5	.10	.02	377	.51	619	260	54	.7	611	7.5
APR.												
01-15	13	.5	.12	.02	372	.51	553	260	56	.6	607	8.3
16-30	12	.5	.04	.01	363	.49	630	260	55	.6	592	8.2
MAY												
01-17	15	.5	.00	.00	379	.52	290	250	58	.7	605	8.1
18-31	19	.5	.06	.01	429	.58	316	290	69	.8	690	8.3
JUNE												
01-15	21	.5	.00	.01	424	.58	222	280	77	.9	671	8.2
16-30	20	.6	.00	.00	432	.59	168	290	85	.9	684	8.2
JULY												
01-15	20	.5	.03	.01	429	.58	293	270	71	1.0	664	--
16-31	20	.5	.03	.01	410	.56	167	260	72	1.0	640	--
AUG.												
01-15	21	.5	.05	.03	434	.59	190	270	66	1.0	681	--
16-31	22	.5	.04	.03	451	.61	289	280	67	1.0	720	--
SEP.												
01-20	18	.5	.13	.01	418	.57	322	280	69	.9	675	--
21-30	20	.5	.25	.02	462	.63	223	310	64	.9	729	--
WTD. AVG.	16	.5	.23	.02	408	.56	--	277	65	.8	652	--
TIME WTD. AVG.	17	.5	.21	.02	415	.57	--	279	67	.8	661	--
TOT. LOAD (TONS)	5460	181	79	5.7	138000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
NOV.												
06...	18	.5	.46	.06	437	.59	470	310	71	.7	698	8.3
JAN.												
30...	15	.5	.48	.02	427	.58	469	310	78	.6	678	8.2
MAY												
02...	13	.4	.17	.02	372	.51	557	270	52	.6	608	8.2
JUNE												
30...	20	.5	.03	.02	457	.62	221	320	77	.8	742	8.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.			
04...	1500	307	.02
NOV.			
06...	1315	398	.06
DEC.			
05...	1515	379	.01
JAN.			
09...	1720	259	.13
30...	1505	407	.03
FEB.			
27...	1330	425	.03
MAR.			
27...	1200	592	.04
MAY			
02...	1200	555	.05
31...	1500	346	.02
JUNE			
30...	1400	179	.04
AUG.			
01...	1400	108	.03
SEP.			
05...	1125	339	.02

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	633	652	638	647	649	653	608	596	---	588	651	665
2	638	653	569	673	630	638	608	540	718	695	637	667
3	689	574	603	702	656	614	620	588	718	729	722	652
4	655	653	579	676	643	628	596	560	---	713	608	---
5	662	638	667	699	643	628	596	572	---	620	604	615
6	689	640	656	723	619	628	614	623	718	611	583	633
7	620	663	675	697	643	644	589	621	598	710	720	685
8	703	634	592	697	643	644	610	671	598	695	733	650
9	680	652	666	697	656	623	536	620	580	695	653	686
10	705	667	640	718	645	644	576	563	631	723	716	659
11	735	667	653	718	644	636	576	652	648	710	692	704
12	705	668	641	658	644	636	585	540	738	659	655	710
13	657	652	656	680	644	645	597	664	751	633	703	686
14	706	638	653	659	644	---	575	682	692	662	670	632
15	661	638	640	634	644	544	575	587	689	673	716	631
16	598	625	614	619	644	524	582	597	708	711	751	691
17	639	652	634	619	634	552	587	579	757	611	770	698
18	660	638	641	652	644	532	576	671	---	609	811	677
19	664	625	641	644	644	572	576	671	623	597	770	672
20	683	642	628	644	631	572	565	671	755	743	813	689
21	683	653	655	652	631	631	556	671	740	---	770	721
22	689	652	640	652	643	631	575	671	639	---	770	730
23	675	629	653	666	643	631	575	635	695	---	733	726
24	660	672	653	666	654	637	568	655	680	---	733	715
25	657	672	653	651	654	638	574	717	685	710	670	740
26	619	652	655	651	640	638	574	704	702	665	700	740
27	658	667	655	651	640	581	579	704	716	727	692	743
28	675	649	652	662	640	581	586	633	718	676	700	740
29	674	665	641	651	---	562	596	715	586	710	692	709
30	689	665	625	664	---	601	596	717	586	677	610	753
31	661	---	656	---	---	612	---	711	---	635	653	---
MONTH	666	648	639	667	642	610	584	639	679	674	700	690
YEAR	MAX	813	MIN	524	MEAN	653						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	4.5	5.5	0.0	4.5	4.0	6.0	10.0	12.5	21.0	19.0	12.0
2	9.5	2.5	4.0	0.0	4.0	3.5	5.5	10.0	16.5	15.0	16.0	13.0
3	7.5	2.0	3.0	1.0	4.5	2.5	8.5	13.5	16.0	18.5	16.0	11.0
4	7.0	2.0	2.0	0.0	3.5	2.5	7.0	9.0	---	16.0	23.0	---
5	6.5	2.5	2.0	0.0	3.0	3.0	7.0	10.5	---	18.5	19.0	11.5
6	10.0	3.0	2.5	0.0	1.5	3.5	8.0	11.0	13.0	19.0	18.0	12.0
7	9.0	2.5	4.0	0.0	2.5	4.0	8.5	12.0	9.0	19.0	16.5	12.5
8	7.0	3.0	4.5	0.5	3.5	2.5	7.0	11.0	15.0	18.0	15.0	17.0
9	8.5	5.5	2.5	0.5	3.5	3.0	10.5	10.5	14.0	18.5	14.5	16.0
10	8.5	9.0	3.0	0.0	4.0	5.0	6.0	10.5	17.0	18.0	14.0	15.0
11	7.0	8.0	2.5	1.0	4.5	4.5	8.0	10.0	18.0	14.0	18.0	11.0
12	8.0	8.0	3.5	1.0	4.0	4.0	7.0	11.0	14.5	14.5	18.5	13.0
13	11.0	7.0	3.5	1.5	5.0	5.0	6.5	8.0	20.0	18.0	18.0	12.0
14	11.0	6.5	3.0	1.5	4.5	---	6.0	7.5	19.0	22.0	17.5	14.5
15	12.0	4.5	2.5	1.0	4.5	5.5	9.0	7.5	19.5	19.0	18.5	15.0
16	9.5	5.5	4.0	1.5	5.0	5.0	8.5	7.0	17.5	21.0	19.0	16.0
17	9.0	6.5	4.5	1.5	5.0	4.5	9.0	7.5	17.0	22.0	20.5	16.0
18	12.0	4.5	2.0	3.0	2.0	5.0	10.0	8.5	---	21.5	17.5	15.5
19	12.0	5.0	1.0	4.0	3.0	1.5	9.0	8.0	17.0	20.0	16.5	13.5
20	9.5	2.0	1.5	4.0	4.5	1.0	9.0	6.5	17.0	22.0	17.0	14.0
21	10.0	3.5	3.5	4.0	2.0	2.0	9.5	7.5	19.5	---	17.0	14.5
22	9.5	5.0	3.5	3.0	2.0	3.5	10.0	9.0	20.5	---	17.0	10.5
23	9.0	3.0	3.5	2.0	1.0	5.0	9.0	12.0	16.5	---	16.5	9.0
24	9.0	3.5	2.5	4.0	3.0	6.0	10.5	14.5	22.5	---	15.0	12.0
25	9.0	2.0	2.0	6.0	5.5	5.0	11.5	12.0	23.0	20.0	15.0	15.0
26	7.5	2.0	1.0	3.0	2.0	6.5	11.0	17.0	16.5	22.0	14.0	10.5
27	9.0	2.0	1.0	2.0	2.5	7.0	7.0	16.0	15.0	21.0	19.0	12.0
28	7.0	5.0	1.5	3.0	2.5	7.5	8.5	17.0	15.0	18.5	20.0	13.0
29	7.0	4.0	2.0	2.0	---	5.0	9.5	12.0	21.0	22.0	19.0	13.5
30	7.0	4.0	0.5	2.5	---	6.0	9.5	9.5	17.0	22.5	15.0	9.0
31	6.5	---	0.0	---	---	5.5	---	---	---	18.0	13.0	---
MONTH	9.0	4.5	2.5	2.0	3.5	4.5	8.5	10.5	17.0	19.0	17.0	13.0
YEAR	MAX	23.0	MIN	0.0	MEAN	9.0						

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	319	37	32	352	39	37	386	44	46
2	317	32	27	364	25	25	394	48	51
3	311	32	27	364	36	35	378	39	40
4	305	47	39	352	35	33	368	100	99
5	305	42	35	358	47	45	354	100	96
6	314	29	25	403	55	60	340	84	77
7	349	49	46	408	48	53	341	64	59
8	364	61	60	417	48	54	345	86	80
9	442	54	64	424	34	39	337	75	68
10	439	67	79	449	38	46	336	88	80
11	421	76	86	425	52	60	333	76	68
12	394	64	68	430	60	70	342	79	73
13	388	40	42	436	74	87	342	81	75
14	388	50	52	424	74	85	339	107	98
15	403	53	58	410	88	97	332	100	90
16	427	37	43	414	62	69	332	89	80
17	430	34	39	428	33	38	337	75	68
18	415	35	39	428	67	77	374	91	92
19	370	36	36	437	76	90	394	97	103
20	370	57	57	409	43	47	381	95	98
21	358	51	49	387	42	44	389	86	90
22	349	44	41	391	59	62	392	97	103
23	346	50	47	378	56	57	395	84	90
24	343	38	35	379	42	43	391	89	94
25	346	33	31	372	47	47	390	83	87
26	337	30	27	368	46	46	380	75	77
27	325	35	31	363	57	56	378	76	78
28	328	49	43	363	58	57	386	65	68
29	325	43	38	365	43	42	380	46	47
30	322	40	35	374	57	58	382	62	64
31	331	36	32	--	--	--	336	113	103
TOTAL	11181	--	1363	11872	--	1659	11284	--	2442

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	327	49	43	433	71	83	466	92	116
2	333	35	31	430	85	99	494	67	116
3	330	87	78	430	60	70	473	87	111
4	300	49	40	430	63	73	484	48	63
5	280	38	29	442	76	91	480	54	70
6	270	99	72	445	74	89	487	69	91
7	250	60	41	445	52	62	480	72	93
8	230	58	36	445	50	60	484	57	74
9	220	29	17	442	66	79	470	64	81
10	210	24	14	442	67	80	463	102	128
11	206	28	16	445	66	79	463	111	139
12	219	29	17	442	67	80	484	88	115
13	283	13	9.9	442	75	90	515	150	209
14	346	19	18	445	98	118	508	215	295
15	391	15	16	445	110	132	494	233	311
16	442	10	12	449	93	113	526	251	356
17	508	66	96	452	73	89	668	352	635
18	466	48	60	452	77	94	800	365	788
19	456	87	107	452	68	83	772	160	334
20	418	35	40	452	34	41	575	72	112
21	406	41	45	442	48	57	536	71	103
22	391	20	21	439	51	60	550	79	117
23	408	14	15	439	58	69	529	82	117
24	403	10	11	442	66	79	522	120	169
25	403	60	65	445	65	78	529	157	224
26	403	56	61	456	77	95	543	138	202
27	400	37	40	449	82	99	656	143	253
28	400	56	60	456	93	115	697	215	405
29	412	54	60	--	--	--	707	180	364
30	421	39	44	--	--	--	626	150	254
31	438	50	58	--	--	--	609	140	230
TOTAL	10954	--	1272.9	12428	--	2357	17090	--	6655

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	594	116	186	620	101	169	297	122	98
2	579	119	186	557	56	84	273	112	83
3	556	107	161	517	35	49	243	104	68
4	546	105	155	471	59	75	217	89	52
5	539	79	115	347	44	41	200	72	39
6	479	68	88	275	60	45	189	65	33
7	532	53	76	265	71	51	187	66	33
8	518	67	94	222	63	38	198	71	38
9	540	87	127	185	53	26	165	53	24
10	554	84	126	167	65	29	144	53	21
11	596	84	135	178	96	46	151	58	24
12	582	84	132	177	64	31	164	60	27
13	571	66	102	197	43	23	174	71	33
14	543	48	70	187	43	22	164	56	25
15	529	62	89	175	60	28	148	47	19
16	526	77	109	124	68	23	117	40	13
17	519	88	123	143	76	29	117	28	8.8
18	568	99	152	173	60	28	126	20	6.8
19	603	98	160	204	82	45	121	40	13
20	636	103	177	389	227	238	111	42	13
21	720	93	181	459	120	149	107	38	11
22	724	79	154	416	100	112	129	44	15
23	728	84	165	312	73	61	165	64	29
24	772	107	223	238	80	51	170	80	37
25	668	77	139	238	87	56	149	41	16
26	636	75	129	241	82	53	141	38	14
27	648	65	114	217	60	35	161	48	21
28	652	62	109	181	45	22	183	60	30
29	620	75	126	176	51	24	190	49	25
30	628	99	168	257	82	57	180	63	31
31	--	--	--	323	117	102	--	--	--
TOTAL	17906	--	4071	8631	--	1842	5081	--	900.6

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	200	74	40	113	25	7.6	357	59	57
2	198	77	41	115	48	15	386	41	43
3	245	82	54	131	62	22	405	54	59
4	304	123	101	124	45	15	355	51	49
5	275	116	86	132	52	19	336	44	40
6	292	20	16	136	51	19	320	39	34
7	291	110	86	165	67	30	281	36	27
8	277	70	52	182	51	25	264	17	12
9	262	69	49	220	89	53	258	22	15
10	245	85	56	218	85	50	259	34	24
11	241	95	62	175	50	24	250	29	20
12	264	77	55	162	44	19	263	25	18
13	250	73	49	174	37	17	280	25	19
14	229	81	50	194	54	28	275	23	17
15	219	80	47	195	51	27	257	16	11
16	175	76	36	189	51	26	255	18	12
17	160	54	23	193	57	30	228	30	18
18	157	50	21	182	55	27	231	26	16
19	155	41	17	206	43	24	225	27	16
20	146	64	25	225	41	25	226	24	15
21	142	75	29	239	63	41	215	44	26
22	140	57	22	247	49	33	220	29	17
23	141	45	17	248	52	35	209	30	17
24	146	39	15	230	58	36	195	25	13
25	157	44	19	242	49	32	183	23	11
26	164	51	23	220	55	33	171	31	14
27	163	39	17	227	39	24	158	31	13
28	156	36	15	241	37	24	152	21	8.6
29	146	32	13	255	57	39	146	14	5.5
30	140	41	15	309	81	69	142	22	8.4
31	126	38	13	339	55	50	--	--	--
TOTAL	6206	--	1164	6228	--	917.6	7500	--	655.5

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	126361
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	25299.6

06027200 JEFFERSON RIVER AT SILVER STAR, MT.

LOCATION.--Lat 45°41'10", long 112°16'59", in SE¼SW¼SE¼ sec.1, T.2 S., R.6 W., Madison County, at gaging station at county road bridge, 0.2 mi (0.3 km) south of Silver Star, and 7.9 mi (12.7 km) downstream from Hells Canyon Creek.

DRAINAGE AREA.--7,683 mi² (19,899 km²).

PERIOD OF RECORD.--Chemical analyses: September 1957 to February 1958 (monthly), March 1958 to September 1959 (daily), August 1960 to September 1962 (daily), July 1965 to September 1974 (daily), discontinued.
Water temperatures: March 1958 to September 1959, August 1960 to September 1962, July 1965 to September 1974 (discontinued).
Sediment records: October 1957 to September 1959, August 1960 to September 1962, July 1965 to September 1974 (discontinued).
Prior to October 1972, published as "near Twin Bridges."

EXTREMES.--1973-74:
Dissloved solids: Maximum, 381 mg/l Jan. 1-13; minimum, 104 mg/l June 1-9.
Hardness: Maximum, 270 mg/l Jan. 1-13; minimum, 67 mg/l June 1-9.
Specific conductance: Maximum daily, 666 micromhos Jan. 5; minimum daily, 153 micromhos June 9.
Water temperatures: Maximum, 25.5°C July 25; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 3,700 mg/l Jan. 3; minimum daily, 3 mg/l on several days during August and September.
Sediment discharge: Maximum daily, 58,900 tons (53,400 tonnes) June 16; minimum daily, 3.5 tons (3.2 tonnes) Sept. 26.

Period of record:
Dissolved solids: Maximum, 455 mg/l Sept. 1-30, 1969; minimum, 93 mg/l June 1-14, 1959.
Hardness: Maximum, 311 mg/l Aug. 24-31, 1969; minimum, 49 mg/l May 11-31, 1958.
Specific conductance: Maximum daily, 749 micromhos Sept. 23, 1969; minimum daily, 102 micromhos May 23, 1958.
Water temperatures (1958-59, 1960-62, 1965-74): Maximum observed, 26.0°C July 11, 1973; minimum, freezing point on many days during winter periods most years.
Sediment concentrations: Maximum daily, 3,700 mg/l Jan. 3, 1974; minimum daily, 2 mg/l July 19, 1966, Aug. 13, 1967.
Sediment discharge: Maximum daily, 58,900 tons (53,400 tonnes) June 16, 1974; minimum daily, 2 tons (1.8 tonnes) July 19, 1966.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Flow affected by ice Nov. 1-5, Dec. 25 to Feb. 1. Prior to January 1970, sampling site was 4 mi (6.4 km) upstream. Some regulation by upstream reservoirs. Many diversions for irrigation upstream from station.

CHEMICAL ANALYSES. WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	968	--	20	10	55	21	23	5.4	218	0	84
NOV.												
01-11	--	996	--	21	0	62	20	22	4.6	232	0	84
12-21	--	1150	--	20	10	53	17	19	4.1	196	0	67
22-30	--	873	--	20	10	58	18	21	4.2	219	0	79
DEC.												
01-31	--	929	--	20	0	57	19	21	4.4	217	0	72
JAN.												
01-13	--	615	--	23	10	68	24	22	5.2	251	0	99
14-31	--	1160	--	20	190	52	18	18	4.3	196	0	68
FEB.												
01-28	--	974	--	20	0	56	19	20	4.4	214	0	78
MAR.												
01-17	--	919	--	20	120	55	19	21	4.1	213	0	80
18-31	--	1220	--	20	10	53	17	18	4.3	194	0	77
APR.												
01-10	--	1290	--	20	20	48	16	17	4.2	183	0	54
11-18	--	1870	--	20	20	42	13	14	4.1	162	0	45
19-30	--	3520	--	19	40	32	10	10	3.5	122	0	32
MAY												
01-15	--	3170	--	16	20	24	6.7	7.8	2.3	92	0	30
16-31	--	2970	--	17	50	25	7.0	8.8	2.5	97	0	29
JUNE												
01-09	--	5980	--	16	40	19	4.8	6.3	1.8	73	0	17
10-30	--	6880	--	15	40	24	5.5	5.8	2.0	95	0	16
JULY												
01-14	--	2390	--	18	20	33	9.7	11	3.0	136	--	35
15-23	--	1270	--	18	20	36	11	15	3.3	151	--	41
24-31	--	653	--	19	30	41	15	18	3.8	171	--	50
AUG.												
01-15	--	636	--	19	10	50	15	18	4.0	194	--	60
16-31	--	700	--	20	40	58	19	22	4.7	228	--	78
SEP.												
01-30	--	544	--	21	10	65	23	26	3.7	246	5	87
WTD. AVG.	--	--	--	18	35	37	11	13	3.2	144	0	44
TIME WTD. AVG.	--	1720	--	19	31	48	16	18	3.9	186	0	63
TOT. LOAD (TONS)	--	--	--	30400	59	63000	19400	21600	5410	244000	220	74200

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
NOV.												
07...	1015	1260	.0	20	20	62	21	23	5.0	237	0	80
JAN.												
16...	1130	1580	.5	19	30	58	19	21	5.3	210	0	79
FEB.												
07...	1300	1350	.0	20	30	57	20	19	4.2	213	0	76
MAY												
03...	0830	3440	9.0	16	160	24	7.3	10	2.7	94	0	31
JUNE												
30...	1540	3470	21.0	16	160	20	7.2	8.0	2.4	100	0	20
SEP.												
30...	1320	450	10.5	19	20	63	24	24	5.6	246	--	84

06027200 JEFFERSON RIVER AT SILVER STAR, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
01-31	13	.4	.13	.04	330	.45	862	220	45	.7	534	8.3
NOV.												
01-11	12	.4	.20	.02	341	.46	917	240	47	.6	538	8.1
12-21	9.8	.3	.15	.02	288	.39	888	200	37	.6	459	8.1
22-30	11	.3	.23	.02	321	.44	757	220	39	.6	506	8.2
DEC.												
01-31	11	.4	.28	.01	313	.43	785	220	43	.6	517	8.2
JAN.												
01-13	14	.4	.44	.01	381	.52	633	270	63	.6	611	8.1
14-31	10	.4	.32	.00	289	.39	905	200	43	.5	480	8.1
FEB.												
01-28	11	.7	.17	.01	315	.43	828	220	43	.6	510	8.0
MAR.												
01-17	11	.4	.08	.00	316	.43	784	220	41	.6	516	8.1
18-31	9.1	.3	.02	.02	293	.40	965	200	38	.6	468	7.9
APR.												
01-10	8.6	.3	.03	.01	259	.35	902	190	36	.5	437	8.1
11-18	7.2	.2	.02	.01	226	.31	1140	160	26	.5	377	7.0
19-30	5.1	.2	.02	.02	172	.23	1630	120	21	.4	277	7.5
MAY												
01-15	3.3	.2	.00	.00	136	.19	1160	88	12	.4	213	7.8
16-31	3.6	.2	.00	.00	141	.19	1130	91	12	.4	224	7.8
JUNE												
01-09	2.4	.2	.00	.00	104	.14	1680	67	7	.3	163	7.8
10-30	2.0	.2	.01	.01	117	.16	2170	82	4	.3	191	7.8
JULY												
01-14	4.1	.2	.01	.01	181	.25	1170	120	11	.4	297	--
15-23	5.7	.2	.00	.01	205	.28	703	140	11	.6	335	--
24-31	7.3	.3	.01	.01	239	.33	421	160	24	.6	385	--
AUG.												
01-15	8.3	.3	.00	.02	270	.37	464	190	27	.6	446	--
16-31	11	.4	.00	.02	326	.44	616	220	36	.6	534	--
SEP.												
01-30	13	.4	.09	.01	366	.50	538	260	47	.7	596	--
WTD. AVG.	6.1	.3	.06	.01	203	.28	--	140	22	.5	329	--
TIME WTD. AVG.	9.0	.3	.11	.01	270	.37	--	187	33	.6	439	--
TOT. LOAD (TONS)	10400	474	107	17	346000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
NOV.												
07...	12	.4	.31	.06	342	.47	1160	240	47	.6	560	8.2
JAN.												
16...	12	.3	.41	.02	316	.43	1350	220	43	.6	523	7.9
FEB.												
07...	11	.3	.37	.02	314	.43	1150	220	50	.6	507	8.1
MAY												
03...	4.5	.3	.08	.03	143	.19	1330	90	13	.5	232	7.7
JUNE												
30...	3.1	.2	.00	.03	133	.18	1250	95	13	.4	219	7.8
SEP.												
30...	13	.4	.08	.04	355	.48	431	260	54	.7	585	--

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.			
04...	1630	887	.02
NOV.			
07...	1015	1260	.06
DEC.			
07...	1000	1020	.01
JAN.			
16...	1130	1580	.01
FEB.			
07...	1300	1350	.02
28...	1415	1060	.02
MAR.			
28...	1800	1620	.02
MAY			
03...	0830	3440	.05
JUNE			
02...	0900	4950	.04
30...	1540	3470	.05
JULY			
30...	1045	582	.03
SEP.			
06...	1240	656	.02
30...	1120	450	.04

06027200 JEFFERSON RIVER AT SILVER STAR, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	526	503	485	564	471	484	439	293	163	241	394	602
2	542	---	485	633	472	484	434	276	158	251	395	604
3	526	538	485	615	479	500	422	230	170	258	409	684
4	546	578	492	647	472	517	428	204	168	303	409	604
5	477	557	492	666	472	507	433	213	160	307	415	593
6	516	543	490	---	485	492	439	239	168	311	418	593
7	542	547	512	---	498	492	442	228	153	316	423	591
8	481	529	502	---	495	492	434	198	158	316	450	591
9	541	520	511	601	495	501	434	176	153	316	458	589
10	556	511	511	592	495	525	425	159	211	313	448	589
11	556	503	511	608	488	516	411	160	204	312	434	600
12	556	488	511	567	487	507	374	169	169	315	434	606
13	542	452	510	569	487	507	360	177	281	306	440	611
14	---	433	510	508	486	499	356	169	219	300	461	608
15	533	433	513	507	486	499	379	182	181	321	474	592
16	525	433	493	506	494	491	355	224	159	336	481	593
17	501	446	493	475	494	484	324	224	206	333	481	593
18	515	446	495	468	497	431	324	182	177	333	489	582
19	527	459	495	442	496	431	304	284	169	334	489	590
20	518	466	507	462	496	455	310	266	160	330	501	585
21	512	488	520	436	505	470	298	302	160	330	526	582
22	500	545	502	436	521	463	292	287	179	338	536	572
23	518	529	496	436	521	463	313	284	205	349	536	577
24	515	511	512	455	511	469	298	243	179	354	533	582
25	515	503	519	452	510	478	261	241	179	366	531	573
26	515	488	519	446	500	478	220	243	222	382	529	566
27	516	503	516	454	493	478	218	241	179	381	528	566
28	516	488	474	459	500	474	233	197	179	381	558	561
29	516	488	494	466	---	450	246	154	239	381	559	556
30	516	480	511	466	---	433	261	160	237	411	569	561
31	517	---	536	466	---	433	---	169	---	411	596	---
MONTH	523	497	503	514	493	481	349	219	183	330	481	587
YEAR	MAX	666	MIN	153	MEAN	429						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.5	3.5	5.0	0.0	1.0	0.0	---	---	15.0	20.5	20.5	12.5
2	9.0	---	4.0	0.0	0.5	0.0	---	---	15.0	15.5	20.5	10.5
3	8.5	0.0	3.0	0.0	0.5	0.0	---	---	15.0	15.5	20.5	10.5
4	9.5	---	2.0	0.0	0.0	0.0	---	---	15.0	20.5	20.0	12.5
5	12.0	---	---	0.0	0.5	0.0	---	---	10.0	15.5	20.5	14.5
6	11.5	---	1.0	---	0.5	0.5	---	---	10.5	15.5	20.5	14.5
7	8.0	0.0	2.0	---	0.0	0.0	---	---	10.0	20.5	20.5	15.5
8	6.0	2.0	---	---	0.5	0.5	---	---	10.0	15.5	17.5	17.5
9	8.5	3.0	---	0.0	0.0	0.0	---	---	15.0	15.5	15.5	15.5
10	8.0	7.0	---	0.0	0.5	0.0	---	---	20.0	20.5	15.5	14.5
11	8.0	8.0	---	0.0	0.5	0.0	---	---	15.0	15.5	20.5	12.5
12	8.0	8.0	---	0.0	0.0	0.5	---	---	10.5	20.5	19.5	10.5
13	11.0	5.0	---	0.5	0.0	0.5	---	---	15.0	20.5	16.5	10.5
14	---	3.0	---	0.0	0.0	0.5	---	---	20.0	20.5	14.5	12.5
15	9.0	3.0	---	0.5	0.0	0.0	---	---	15.0	20.5	15.5	13.5
16	11.5	4.0	---	0.5	0.5	0.5	---	---	15.0	15.5	15.5	14.5
17	12.5	5.0	---	1.0	0.5	---	---	---	15.5	20.5	20.5	11.5
18	12.5	4.0	3.0	0.0	0.0	---	---	---	15.5	20.5	19.5	13.5
19	13.0	2.0	0.0	0.0	0.5	0.0	---	---	15.5	20.0	18.5	14.5
20	11.0	0.0	1.0	0.0	0.5	0.0	---	---	15.5	20.0	14.5	14.5
21	10.0	0.0	2.5	0.0	0.0	0.0	---	---	15.5	20.0	15.5	13.5
22	11.0	0.0	---	0.0	0.0	0.0	---	---	15.5	25.0	15.5	15.5
23	9.0	1.0	---	0.5	0.0	0.0	---	---	20.5	25.0	16.5	14.5
24	8.5	3.0	0.0	0.0	0.0	0.0	---	---	15.5	20.0	14.5	13.5
25	8.0	2.0	---	0.0	0.0	0.5	---	---	15.5	25.5	16.5	11.5
26	6.0	1.0	---	0.0	0.5	0.5	---	---	15.5	20.5	20.5	14.5
27	6.5	0.0	0.5	0.0	0.0	---	---	---	15.5	20.5	17.5	14.5
28	6.5	2.0	---	0.0	0.0	5.0	---	---	20.5	20.5	15.5	15.5
29	7.0	3.0	---	0.0	---	5.0	---	---	15.5	20.5	16.5	15.5
30	6.5	4.0	---	0.0	---	5.0	---	---	15.5	20.5	15.5	9.5
31	4.5	---	0.0	0.0	---	10.0	---	---	---	20.5	15.5	---
MONTH	9.0	3.0	---	0.0	0.5	1.0	---	---	15.0	19.5	17.5	13.5
YEAR	MAX	25.5	MIN	0.0	MEAN	9.0						

SUSPENDED-SEDIMENT FOR SELECTED DAYS. WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
JAN. 03...	1545	.0	580	4180	6550	10	17	62	91	99	100	--
JUNE 18...	1220	19.0	10600	165	4720	--	--	60	70	87	99	100

06027200 JEFFERSON RIVER AT SILVER STAR, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	980	22	58	960	15	39	1090	88	259
2	935	23	58	940	27	69	1040	63	177
3	917	15	37	920	57	142	1040	44	124
4	882	17	40	900	73	177	1090	29	85
5	917	20	50	950	73	187	674	17	31
6	917	33	82	990	56	150	1100	18	53
7	962	32	83	1200	44	143	1020	39	107
8	1000	32	86	944	38	97	971	31	81
9	1050	29	82	899	34	83	1050	15	43
10	1050	26	74	1150	34	106	1000	12	32
11	1040	31	87	1100	43	128	962	14	36
12	1020	36	99	1150	66	205	874	17	40
13	980	22	58	1360	69	253	962	17	44
14	980	14	37	1150	45	140	917	26	64
15	980	20	53	1440	36	140	990	62	166
16	1070	29	84	962	60	156	917	20	50
17	1030	33	92	1060	86	246	962	14	36
18	1010	30	82	1260	43	146	1020	12	33
19	953	25	64	1160	49	153	926	11	28
20	953	21	54	802	68	147	971	12	31
21	953	62	160	1120	75	227	971	14	37
22	953	35	90	688	58	108	842	19	43
23	953	20	51	723	40	78	926	27	68
24	926	24	60	971	41	107	842	50	114
25	944	27	69	1030	50	139	840	75	170
26	953	56	144	850	55	126	820	43	95
27	935	30	76	770	59	123	800	41	89
28	935	16	40	1030	66	184	800	53	114
29	926	19	48	850	85	195	800	69	149
30	935	20	50	944	112	285	800	88	190
31	962	20	52	--	--	--	780	110	232
TOTAL	30001	--	2200	30273	--	4479	28797	--	2821

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	760	190	390	1150	44	137	917	67	166
2	600	570	923	953	43	111	962	61	158
3	580	3700	5790	1150	35	109	874	77	182
4	580	2470	3870	1100	27	80	874	37	87
5	590	1260	2010	1050	35	99	882	28	67
6	590	630	1000	1100	39	116	971	61	160
7	600	175	284	1210	29	95	882	19	45
8	600	37	60	1100	25	74	926	17	43
9	600	18	29	1040	41	115	926	20	50
10	600	18	29	944	28	71	926	20	50
11	600	22	36	990	39	104	842	26	59
12	600	29	47	980	26	69	882	21	50
13	700	38	72	1080	41	120	882	35	83
14	800	47	102	971	36	94	926	93	233
15	1000	40	108	971	38	100	980	173	458
16	1500	35	142	917	57	141	1030	115	320
17	1500	66	267	917	34	84	935	230	581
18	1500	59	239	908	38	93	1400	296	1120
19	1400	61	231	866	17	40	1520	187	767
20	1200	89	288	858	14	32	1120	61	184
21	1000	61	165	778	13	27	980	45	119
22	1050	27	77	770	21	44	1030	33	92
23	1100	21	62	810	25	55	1080	31	90
24	1100	20	59	971	17	45	1090	37	109
25	1100	42	125	1020	17	47	1140	37	114
26	1100	32	95	882	78	186	1090	64	188
27	1100	43	128	834	25	56	1290	224	780
28	1100	28	83	962	53	138	1450	184	720
29	1100	31	92	--	--	--	1290	79	275
30	1100	45	134	--	--	--	1240	154	516
31	1100	64	190	--	--	--	1350	200	729
TOTAL	28850	--	17127	27282	--	2482	32687	--	8595

06027200 JEFFERSON RIVER AT SILVER STAR, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1350	140	510	2740	84	621	5660	93	1420
2	1410	138	525	2960	57	456	4920	81	1080
3	1590	52	223	3340	45	406	4750	65	834
4	1290	126	439	2910	50	393	5280	94	1340
5	1290	134	467	3000	60	486	6080	1090	17900
6	1140	146	449	2910	18	141	7250	576	11300
7	1140	134	412	3270	23	203	7160	1070	20700
8	1190	118	379	3360	49	445	6740	575	10500
9	1290	26	91	3540	88	841	6000	409	6630
10	1240	28	94	3630	56	549	5210	253	3560
11	1530	70	289	3540	31	296	4510	251	3060
12	1530	46	190	3450	58	540	4560	98	1210
13	1350	96	350	3180	106	910	5160	270	3760
14	1890	90	459	3000	148	1200	6580	252	4480
15	1930	156	813	2660	43	309	8000	1970	42600
16	2010	246	1340	2500	48	324	9440	2310	58900
17	2350	122	774	2260	47	287	10300	1970	54800
18	2340	164	1040	2120	49	280	10600	1090	31200
19	2620	56	396	2340	20	126	10600	333	9530
20	3000	97	786	2340	11	69	9860	160	4260
21	3120	382	3220	2260	30	183	9270	155	3880
22	3030	344	2810	2340	47	297	8360	273	6160
23	2670	97	699	2420	45	296	7490	181	3660
24	3090	115	959	2340	43	272	6710	157	2840
25	3920	340	3600	2340	17	107	6000	132	2140
26	5140	1390	19300	2260	24	146	5540	93	1390
27	5380	1680	24400	2580	92	641	4950	86	1150
28	4230	210	2400	3660	310	3060	4170	113	1270
29	3270	237	2090	4680	199	2510	3720	52	522
30	2820	116	883	5380	117	1700	3500	62	586
31	--	--	--	5660	100	1530	--	--	--
TOTAL	70150	--	70387	94970	--	19622	198370	--	312662

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	3230	55	480	530	5	7.2	695	71	133
2	2940	52	413	518	13	18	681	60	110
3	2890	28	219	482	3	3.9	709	27	52
4	2740	22	163	512	3	4.1	674	37	67
5	2560	21	145	530	10	14	674	20	36
6	2460	23	153	542	24	35	667	8	14
7	2290	17	105	611	46	76	590	12	19
8	2140	15	87	653	22	39	554	48	72
9	2050	17	94	688	19	35	548	18	27
10	1970	18	96	819	36	79	560	21	32
11	2070	22	123	754	14	29	554	12	18
12	2010	21	114	716	12	23	536	3	4.3
13	2180	22	129	695	10	19	578	7	11
14	1910	23	119	738	10	20	560	16	24
15	1740	36	169	754	6	12	572	26	40
16	1600	52	225	746	3	6.0	554	9	13
17	1440	22	86	754	4	8.1	536	12	17
18	1340	22	80	695	8	15	512	8	11
19	1230	31	103	660	7	12	482	37	48
20	1130	30	92	709	23	44	464	24	30
21	1050	19	54	738	5	10	446	11	13
22	980	16	42	778	26	55	395	8	8.5
23	890	20	48	778	71	149	470	6	7.6
24	842	21	48	762	25	51	476	15	19
25	709	13	25	746	46	93	452	3	3.7
26	646	11	19	695	17	32	434	3	3.5
27	625	14	24	660	15	27	524	3	4.2
28	625	14	24	632	27	46	512	8	11
29	618	15	25	611	55	91	464	10	13
30	597	21	34	597	16	26	446	6	7.2
31	560	12	18	646	28	49	--	--	--
TOTAL	50062	--	3555	20740	--	1128.3	16319	--	869.0

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	628501
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	445927.3

06054500 MISSOURI RIVER AT TOSTON, MT.

LOCATION.--Lat 46°08'46", long 111°25'18", in SE¼NW¼ sec.36, T.5 N., R.2 E., Broadwater County, at old highway bridge 2.4 mi (3.9 km) downstream from gaging station, 2.4 mi (3.9 km) upstream from Crow Creek, 10.2 mi (16.4 km) downstream from Sixteenmile Creek, and at mile 2,289.6 (3,684.0 km).

DRAINAGE AREA.--14,669 mi^2 (37,993 km^2), at gaging station.

PERIOD OF RECORD.--Chemical analyses: May 1949 to September 1951, July 1972 to September 1974.
Water temperatures: May 1949 to June 1953, April 1973 to September 1974.
Sediment records: March 1949 to June 1953 (daily), January 1973 to September 1974 (monthly).

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 495 micromhos Jan. 7; minimum daily, 211 micromhos June 8.
Water temperatures: Maximum, 22.0°C July 22, 30; minimum, freezing point on many days during November to February.

Period of record:
Specific conductance (1973-74): Maximum daily, 495 micromhos Jan. 7, 1974; minimum daily, 211 micromhos June 8, 1974.
Water temperatures (1949-52, 1973-74): Maximum, 25.5°C July 25, 1949, July 31, 1951, July 23, 1952; minimum, freezing point on many days during winter periods.

REMARKS.--Some regulation by six reservoirs on tributaries and Clark Canyon Reservoir. Many diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.										
30...	1100	4680	25	37	12	23	4.1	175	0	37
NOV.										
27...	1300	4520	26	44	13	23	3.7	179	0	42
DEC.										
26...	1200	4200	25	43	13	22	3.6	183	0	43
JAN.										
29...	1400	4360	27	42	12	22	3.9	177	0	43
FEB.										
27...	1300	3540	25	46	13	22	3.9	186	0	44
MAR.										
26...	1000	4520	25	42	13	22	4.2	181	0	42
APR.										
29...	1330	10200	24	26	7.1	17	3.3	112	0	26
MAY										
29...	1130	12600	20	24	6.6	13	2.5	110	--	19
JUNE										
26...	1330	16600	16	25	6.0	8.2	1.8	103	--	15
JULY										
30...	1330	2430	19	35	10	17	3.5	152	2	33
AUG.										
27...	1300	3250	21	39	13	19	4.2	168	6	45
SEP.										
25...	1200	3400	25	36	11	21	3.4	163	4	33

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	TUR-BID-ITY (JTU)	CARBON DIOXIDE (CO2) (MG/L)
OCT.										
30...	12	1.4	239	.33	3020	140	0	.8	3	4.4
NOV.										
27...	12	1.1	242	.33	2950	160	17	.8	4	4.5
DEC.										
26...	12	1.2	240	.33	2720	160	11	.8	4	1.8
JAN.										
29...	13	.8	253	.34	2980	150	9	.8	10	1.8
FEB.										
27...	12	1.2	269	.37	2570	170	16	.7	6	.9
MAR.										
26...	13	1.3	246	.33	3000	160	10	.8	7	3.6
APR.										
29...	9.1	1.4	168	.23	4630	94	2	.8	20	4.5
MAY										
29...	6.1	.8	163	.22	5550	87	0	.6	40	4.4
JUNE										
26...	3.5	.4	125	.17	5600	87	3	.4	30	5.2
JULY										
30...	8.5	1.0	203	.28	1330	130	1	.7	3	.6
AUG.										
27...	9.1	.9	230	.31	2020	150	3	.7	3	.7
SEP.										
25...	11	1.5	203	.28	1860	140	0	.8	3	1.1

06054500 MISSOURI RIVER AT TOSTON, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)
OCT.												
30...	1100	6.5	12.0	380	11.0	108	7.8	137	--	10	10	8
NOV.												
27...	1300	.5	2.0	409	13.3	105	7.8	147	1.4	87	7	3
DEC.												
26...	1200	1.0	3.0	409	12.4	98	8.2	146	1.4	91	6	16
JAN.												
29...	1400	.5	10.0	404	12.8	102	8.2	148	--	67	20	29
FEB.												
27...	1300	2.5	4.0	429	12.8	108	8.5	153	--	59	10	3
MAR.												
26...	1000	5.5	11.0	406	11.4	105	7.9	148	--	--	6	6
APR.												
29...	1330	9.5	15.5	268	10.4	106	7.6	92	--	--	30	32
MAY												
29...	1130	12.0	10.5	210	9.6	103	7.6	90	--	--	240	310
JUNE												
26...	1330	16.5	25.0	215	9.0	106	7.5	88	--	--	100	130
JULY												
30...	1330	21.5	22.0	302	8.0	104	8.6	128	--	--	13	50
AUG.												
27...	1300	19.0	25.0	349	8.8	110	8.6	148	--	--	3	8
SEP.												
25...	1200	12.5	19.5	358	10.4	113	8.4	140	--	--	4	11

DATE	TIME	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL PHYTO-PLANK-TON (CELLS PER ML)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON CHLORO-PHYLL B MG/SQ M	PERI-PHYTON CHLORO-PHYLL A MG/SQ M
OCT.												
30...	1100	.06	.28	.22	--	--	.07	--	1500	--	--	--
NOV.												
27...	1300	.20	.57	.37	--	--	.04	--	620	--	--	--
DEC.												
26...	1200	.24	.55	.31	.05	.05	.04	4.2	2000	--	--	--
JAN.												
29...	1400	.32	.70	.38	--	--	.04	--	1300	--	--	--
FEB.												
27...	1300	.23	.70	.47	.02	.03	.08	--	2700	--	--	--
MAR.												
26...	1000	.18	.65	.47	--	--	.08	--	3600	--	--	--
APR.												
29...	1330	.12	.80	.68	--	--	.16	--	960	--	--	--
MAY												
29...	1130	.06	.50	.44	--	--	.19	9.6	5900	--	--	--
JUNE												
26...	1330	.00	.70	.70	--	--	.44	--	6800	--	--	--
JULY												
30...	1330	.01	.45	.44	--	--	.05	--	6200	--	--	--
AUG.												
27...	1300	.00	.48	.48	--	--	.03	--	3000	--	--	--
SEP.												
25...	1200	.09	.37	.28	--	--	.08	4.6	3000	20	.9	10

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
DEC.												
26...	1200	22	1	0	2	1	20	5	0	.0	0	40
MAY												
29...	1130	11	1	0	1	4	30	0	20	.0	0	0
SEP.												
25...	1200	24	1	0	0	3	20	2	10	.0	0	0

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
DEC.												
26...	1200	22	<10	0	<50	70	200	<100	40	.1	0	60
MAY												
29...	1130	23	10	0	<50	140	4400	<100	190	.0	0	70
SEP.												
25...	1200	34	<10	0	<50	10	240	<100	20	.0	0	30

06054500 MISSOURI RIVER AT TOSTON, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	387	367	398	422	394	414	385	302	228	228	336	379
2	387	367	389	422	394	414	388	305	248	234	336	378
3	391	367	389	422	395	409	386	321	242	235	333	384
4	391	372	389	424	395	409	386	290	234	251	332	388
5	381	377	385	447	395	409	386	290	228	251	339	389
6	381	392	391	446	404	415	386	280	230	269	348	389
7	381	392	399	495	399	411	382	279	234	268	347	380
8	381	387	393	468	401	411	386	260	211	273	356	375
9	383	387	393	481	401	406	386	258	219	275	356	371
10	390	392	399	481	401	406	386	268	222	288	355	366
11	391	382	393	468	404	405	373	242	230	294	357	366
12	395	382	402	474	404	405	378	242	232	278	363	367
13	390	382	402	474	404	405	377	242	222	294	366	361
14	390	381	393	447	404	405	360	254	218	291	368	360
15	385	355	393	478	404	406	359	256	232	294	362	359
16	385	344	388	380	404	405	359	258	217	297	364	359
17	385	344	389	371	404	399	358	258	216	300	364	355
18	385	347	393	366	404	356	352	277	253	308	364	355
19	385	355	388	390	404	362	343	279	234	310	364	358
20	381	368	388	390	401	369	326	282	219	305	364	358
21	381	384	393	390	401	385	326	282	219	306	363	358
22	377	384	393	398	407	390	319	304	212	305	368	358
23	372	391	393	398	407	395	316	307	212	315	372	358
24	372	397	398	385	407	395	326	310	214	319	379	357
25	372	391	398	382	405	395	313	302	214	323	381	356
26	381	391	398	382	405	395	309	282	222	325	385	357
27	381	391	398	388	411	395	281	275	218	324	380	356
28	381	391	398	394	411	371	267	270	217	326	380	354
29	381	391	403	395	---	367	267	246	238	326	381	352
30	376	397	403	395	---	390	284	233	222	331	378	355
31	376	---	409	397	---	390	---	235	---	329	378	---
MONTH	383	378	395	419	403	396	348	274	225	292	361	365
YEAR	MAX	495	MIN	211	MEAN	353						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	4.5	4.0	0.0	1.0	3.5	6.0	11.0	12.0	18.0	21.0	15.5
2	12.0	2.0	3.5	0.0	1.0	4.0	6.0	10.0	13.5	17.5	20.5	13.0
3	8.5	1.0	2.5	0.0	0.5	3.0	6.0	11.0	14.0	16.0	20.5	14.0
4	9.0	0.0	1.0	0.0	1.0	2.0	5.0	10.5	15.0	17.0	21.0	15.0
5	9.5	0.0	0.0	0.0	0.5	2.5	7.0	11.5	12.5	18.0	21.0	15.0
6	9.5	0.0	0.0	0.0	0.0	4.0	7.0	14.0	12.0	17.5	21.5	16.0
7	10.0	0.5	1.5	0.0	0.0	2.0	6.5	11.5	11.0	17.5	20.0	15.0
8	8.5	0.0	2.0	0.0	0.5	1.5	7.0	12.5	10.5	17.5	20.5	15.5
9	7.5	1.0	0.5	0.0	1.0	1.5	7.0	11.5	12.5	18.0	18.0	16.5
10	7.0	3.5	0.5	0.0	1.0	1.0	8.5	11.0	13.0	18.5	16.5	16.0
11	7.5	5.0	1.0	0.0	1.0	0.5	7.0	10.0	15.0	18.0	17.0	13.0
12	7.5	6.0	2.0	0.0	1.5	2.0	8.0	11.0	16.0	16.5	17.5	11.5
13	7.0	5.5	2.0	1.0	1.5	4.5	6.0	8.5	17.0	17.0	17.0	11.0
14	10.0	5.0	2.5	1.0	2.0	3.0	6.5	8.0	17.0	20.0	16.0	12.0
15	10.5	4.0	1.0	2.0	2.0	3.0	8.5	8.5	17.0	21.5	14.5	13.0
16	9.0	4.0	1.5	2.0	3.0	4.0	9.5	8.0	16.0	20.0	16.5	13.5
17	9.5	4.5	3.0	1.0	3.0	7.0	9.5	9.5	17.0	21.0	17.0	13.5
18	10.0	3.5	2.0	0.5	3.0	5.0	11.0	8.0	16.5	20.5	18.0	14.0
19	10.0	1.0	1.0	1.0	3.0	4.0	11.0	10.0	16.5	21.0	18.5	14.0
20	10.5	1.5	0.0	0.5	2.5	0.5	10.5	7.5	17.0	21.5	17.0	14.0
21	10.0	1.0	1.0	0.0	2.0	2.0	8.5	7.0	17.0	21.5	14.5	13.0
22	9.5	1.0	2.0	0.5	1.5	0.5	9.0	8.0	16.5	22.0	16.5	12.5
23	10.0	0.5	2.0	1.0	0.0	2.0	11.0	10.5	16.5	20.5	17.0	12.5
24	9.5	1.0	1.5	1.0	1.0	2.5	12.0	13.0	17.0	20.0	18.0	13.0
25	8.5	0.0	1.0	1.5	1.0	3.0	13.0	14.0	18.0	21.0	18.5	13.5
26	7.0	0.0	0.0	0.5	2.5	5.0	13.0	14.0	18.0	20.5	18.5	13.0
27	6.5	0.5	0.0	0.5	1.5	8.0	10.0	15.0	16.5	20.5	18.0	12.0
28	7.0	1.0	0.0	1.0	2.0	8.0	7.5	14.5	17.0	21.0	18.5	11.0
29	7.0	2.0	0.0	1.0	---	6.0	7.5	13.5	17.0	21.5	18.0	11.0
30	7.0	4.0	0.0	1.0	---	5.5	9.0	10.5	17.5	22.0	18.0	11.5
31	5.5	---	0.0	0.0	---	6.0	---	10.5	---	21.0	16.5	---
MONTH	9.0	2.0	1.5	0.5	1.5	3.5	8.5	11.0	15.5	19.5	18.0	13.5
YEAR	MAX	22.0	MIN	0.0	MEAN	8.5						

PHYTOPLANKTON ANALYSES, OCTOBER 1973 TO SEPTEMBER 1974

DATE	TOTAL COUNT CELLS/ML	CODOMINANTS (S)	%COMPOSITION
OCT. 30...	1,500	*Diatoma (sp)*	20
NOV. 27...	620	*Diatoma (sp)*	23
DEC. 26...	2,000	*Cyclotella (sp)* *Navicula (sp)* *Diatoma (sp)*	27 26 17
JAN. 29...	1,300	*Navicula (sp)* *Diatoma (sp)* *Gomphonema (sp)*	37 16 16
FEB. 27...	2,700	*Lyngbya (sp)* *Cyclotella (sp)* *Navicula (sp)*	22 21 19
MAR. 26...	3,600	*Navicula (sp)* *Gomphonema (sp)*	33 23
APR. 29...	960	*Gomphonema (sp)* *Navicula (sp)*	24 24
MAY 29...	5,900	*Achnanthes (sp)* *Navicula (sp)*	21 20
JUNE 26...	6,800	*Lyngbya (sp)*	67
July 30...	6,200	*Lyngbya (sp)*	61
AUG 27...	3,000	*Navicula (sp)* *Melosira (sp)*	24 16
SEPT. 25...	3,000	*Navicula (sp)*	32

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT. 30...	1100	6.5	4680	18	227	65
NOV. 27...	1300	.5	4520	10	122	81
DEC. 26...	1200	1.0	4200	14	159	68
JAN. 29...	1400	.5	4360	54	636	76
FEB. 27...	1300	2.5	3540	17	162	82
MAR. 26...	1000	5.5	4520	53	647	83
APR. 29...	1330	9.5	10200	177	4870	71
MAY 29...	1130	12.0	12600	200	6800	76
JUNE 26...	1330	16.5	16600	241	10800	50
JULY 30...	1330	21.5	2430	10	66	86
AUG. 27...	1300	19.0	3250	13	114	66
SEP. 25...	1200	12.5	3400	6	55	69

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT.

LOCATION.--Lat 46°38'58", long 111°43'39", in NW¼SE¼SE¼ sec.4, T.10 N., R.1 W., Lewis and Clark County, just downstream from generator outlet at Canyon Ferry Dam, 15 mi (24 km) east of Helena, and at mile 2,242.8 (3,608.7 km).

DRAINAGE AREA.--15,904 mi² (41,191 km²).

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1974.
Water temperatures: October 1967 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 249 mg/l Apr. 1-30, May 1-31; minimum, 176 mg/l Sept. 1-17.
Hardness: Maximum, 160 mg/l Apr. 1-30, May 1-31; minimum, 110 mg/l Aug. 1-31, Sept. 1-17.
Specific conductance: Maximum daily, 400 micromhos on several days in May; minimum daily, 273 micromhos Aug. 20.
Water temperatures: Maximum, 17.0°C on several days in September; minimum, 2.5°C on many days during January and February.
Period of record:
Dissolved solids: Maximum, 282 mg/l Mar. 1-31, 1970; minimum, 172 mg/l July 8-31, 1971.
Hardness: Maximum, 164 mg/l Apr. 1-30, 1969; minimum, 100 mg/l Aug. 1-31, 1971.
Specific conductance: Maximum daily, 439 micromhos June 2, 10, 1973; minimum daily, 241 micromhos Dec. 16, 1968.
Water temperatures: Maximum observed, 20.0°C Aug. 27, 1969; minimum, freezing point on several days during winter periods some years.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Records of discharge furnished by Canyon Ferry Project Office, Bureau of Reclamation, Helena, Mt. Flow completely regulated. Many diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	4040	--	20	20	39	11	20	4.0	170	0	38
NOV.												
01-30	--	5020	--	20	0	39	12	20	3.9	170	0	39
DEC.												
01-31	--	5310	--	21	10	38	12	21	4.0	171	0	38
JAN.												
01-31	--	5530	--	21	160	38	12	20	3.8	171	0	40
FEB.												
01-28	--	5730	--	21	30	40	12	21	4.2	175	0	40
MAR.												
01-31	--	5990	--	22	10	40	13	21	3.7	179	0	44
APR.												
01-30	--	6360	--	23	20	42	14	22	3.9	181	0	42
MAY												
01-31	--	7340	--	22	10	41	13	22	3.8	178	0	46
JUNE												
01-30	--	11700	--	22	20	39	12	21	4.1	168	0	40
JULY												
01-17	--	8580	--	22	20	36	11	20	3.2	155	--	41
18-31	--	5800	--	21	20	34	11	18	3.2	146	--	34
AUG.												
01-31	--	5130	--	20	10	31	7.7	15	3.1	135	--	27
SEP.												
01-17	--	4510	--	19	10	31	8.4	14	2.2	139	--	26
18-30	--	4500	--	19	10	33	8.8	15	2.5	146	--	28
WTD. AVG.	--	--	--	21	26	38	12	20	3.7	167	--	39
TIME WTD. AVG.	--	6160	--	21	27	38	12	20	3.7	166	--	38
TOT. LOAD (TONS)	--	--	--	129000	159	231000	71000	121000	22500	1012000	--	236000

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SIO2) (MG/L)	DIS- SOLVED IRON (FE) (UG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)
OCT.												
23...	1345	5080	12.0	20	10	39	11	19	3.7	172	0	36
JAN.												
29...	1000	5640	2.5	22	150	40	12	20	3.8	177	0	40
APR.												
29...	0845	6340	5.5	21	0	41	13	22	3.7	168	1	43
JUNE												
26...	0830	17000	9.5	23	20	42	12	21	3.8	164	0	41
SEP.												
24...	1350	3720	15.0	19	20	34	9.3	15	3.0	145	--	24

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT. 01-31	9.9	1.0	.00	.04	227	.31	2480	140	3	.7	372	8.0
NOV. 01-30	10	1.0	.03	.03	229	.31	3100	150	7	.7	369	8.2
DEC. 01-31	11	1.0	.05	.04	231	.31	3310	140	4	.8	378	8.1
JAN. 01-31	12	1.2	.05	.00	233	.32	3480	140	4	.7	389	8.2
FEB. 01-28	11	1.2	.06	.02	237	.32	3670	150	6	.7	396	7.9
MAR. 01-31	11	1.2	.02	.01	244	.33	3950	150	7	.7	399	7.6
APR. 01-30	11	1.1	.07	.02	249	.34	4280	160	14	.8	412	7.9
MAY 01-31	12	1.1	.01	.01	249	.34	4930	160	10	.8	406	8.1
JUNE 01-30	11	1.1	.00	.02	233	.32	7360	150	9	.8	379	8.0
JULY 01-17	10	1.0	.01	.01	221	.30	5120	140	8	.7	354	--
18-31	8.6	.9	.00	.02	203	.28	3180	130	10	.7	328	--
AUG. 01-31	7.5	.8	.00	.03	179	.24	2480	110	0	.6	292	--
SEP. 01-17	6.5	.7	.01	.01	178	.24	2140	110	0	.6	293	--
18-30	6.8	.7	.10	.00	186	.25	2260	120	0	.6	295	--
WTD. AVG.	10	1.0	.03	.02	228	.31	--	143	7	.7	372	--
TIME WTD. AVG.	10	1.0	.03	.02	225	.31	--	142	6	.7	369	--
TOT. LOAD (TONS)	63100	6340	158	116	1382000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT. 23...	10	1.0	.13	.04	225	.31	3090	140	2	.7	377	8.1
JAN. 29...	11	1.4	.13	.03	238	.32	3620	150	4	.7	391	8.2
APR. 29...	12	1.6	.01	.02	241	.33	4130	160	16	.8	410	8.4
JUNE 26...	11	1.3	.11	.01	237	.32	10900	150	20	.7	379	8.1
SEP. 24...	7.4	.7	.15	.05	190	.26	1910	120	4	.6	313	--

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT. 23...	1345	5080	.08
NOV. 19...	1400	5080	.02
DEC. 26...	0935	5370	.05
JAN. 29...	1000	5640	.02
FEB. 27...	1000	5810	.03
MAR. 26...	1300	6030	.03
APR. 29...	0845	6340	.06
MAY 30...	1345	7600	.02
JUNE 26...	0830	17000	.03
JULY 30...	0900	5950	.04
AUG. 28...	1030	3800	.05
SEP. 24...	1350	3720	.06

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	360	368	364	373	376	384	396	395	385	354	289	294
2	364	368	367	373	376	384	396	395	385	354	303	292
3	364	368	366	373	376	382	396	398	385	345	303	284
4	359	368	366	373	376	383	396	398	393	353	283	284
5	359	368	366	373	376	382	396	395	393	349	306	292
6	359	368	366	373	376	382	396	399	393	340	303	292
7	359	368	366	374	376	386	396	400	394	351	278	293
8	359	368	366	373	376	387	397	400	388	339	297	283
9	359	368	366	374	381	385	397	400	386	339	297	278
10	359	366	366	374	381	387	397	400	381	348	300	288
11	359	366	366	375	381	387	397	400	376	340	306	298
12	359	366	366	375	381	387	398	400	381	329	300	293
13	---	367	366	376	381	385	398	397	381	333	303	291
14	359	364	366	375	382	385	398	400	381	333	281	279
15	---	364	367	376	382	385	397	398	381	339	281	279
16	359	364	367	376	382	385	397	398	371	339	297	281
17	359	364	370	376	382	385	397	398	376	339	303	294
18	360	364	367	375	382	386	397	398	381	332	291	302
19	359	368	367	376	382	386	397	398	381	332	281	305
20	363	364	370	374	386	386	397	398	376	329	273	302
21	363	364	370	374	386	386	397	398	371	325	276	299
22	363	364	371	375	386	385	397	398	371	319	278	302
23	363	364	371	375	386	385	397	398	371	336	283	302
24	367	364	371	374	386	393	397	398	371	325	281	326
25	367	368	371	374	387	391	397	396	374	325	281	319
26	367	368	371	374	387	391	397	390	374	311	281	316
27	367	368	371	373	386	391	397	395	369	303	286	316
28	361	368	371	375	386	391	397	391	365	318	283	307
29	361	368	371	377	---	391	397	391	359	318	281	304
30	361	368	371	378	---	391	397	389	359	317	297	319
31	361	---	371	379	---	391	---	390	---	311	283	---
MONTH	361	366	368	375	381	387	397	397	378	333	290	297
YEAR	MAX	400	MIN	273	MEAN	361						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	11.0	6.5	3.0	2.5	3.0	4.0	6.0	8.5	10.5	16.0	16.5
2	14.0	11.0	6.0	3.0	2.5	3.0	3.5	6.5	9.0	10.5	16.0	16.5
3	14.0	10.5	6.0	3.0	2.5	3.0	3.5	6.5	9.0	10.5	16.5	17.0
4	14.0	10.0	6.0	2.5	2.5	3.0	3.5	6.5	8.5	10.5	16.5	16.5
5	14.0	10.0	6.0	2.5	3.0	3.0	3.5	6.5	8.5	10.5	15.0	16.0
6	14.0	9.5	6.0	2.5	3.0	3.0	3.5	6.5	8.5	11.0	15.0	16.5
7	14.0	9.5	5.5	3.0	3.0	3.5	3.5	6.5	8.5	11.0	15.0	17.0
8	14.0	9.0	5.5	2.5	3.0	3.5	3.5	6.5	9.0	11.5	15.0	17.0
9	14.0	9.0	5.5	2.5	2.5	3.5	3.5	6.5	9.5	11.5	15.0	17.0
10	14.0	9.0	5.5	2.5	2.5	3.5	3.5	6.5	10.0	11.5	16.0	16.5
11	14.0	9.0	5.5	2.5	2.5	3.5	3.5	6.5	10.0	12.0	15.5	16.5
12	14.0	8.5	5.5	2.5	2.5	3.0	3.5	6.5	10.0	12.0	15.5	16.5
13	14.0	8.5	5.5	2.5	2.5	3.0	3.5	7.0	10.0	12.0	15.5	17.0
14	14.0	8.0	5.0	2.5	2.5	3.0	3.5	7.0	10.0	12.0	15.5	17.0
15	13.5	8.0	5.0	2.5	2.5	3.0	4.0	7.0	10.0	12.0	15.5	17.0
16	13.5	8.0	5.0	2.5	2.5	3.0	4.5	7.0	10.5	12.0	15.5	17.0
17	13.0	8.0	5.0	2.5	2.5	3.5	4.5	7.0	9.5	12.0	15.5	16.0
18	13.0	7.5	5.0	2.5	2.5	3.5	4.5	7.0	9.5	12.0	15.5	16.0
19	13.0	7.5	4.5	2.5	2.5	3.5	4.5	7.0	10.0	12.0	15.5	16.0
20	12.5	7.5	4.5	2.5	2.5	3.5	4.5	7.0	10.0	12.0	16.5	16.0
21	12.5	7.5	4.0	2.5	2.5	3.5	4.5	7.5	10.0	13.0	16.5	15.5
22	12.0	7.5	4.0	2.5	2.5	3.5	4.5	7.5	10.0	13.0	16.5	15.5
23	12.0	7.5	4.0	2.5	2.5	3.5	5.0	7.5	10.0	13.0	16.5	15.5
24	12.0	7.0	4.0	2.5	2.5	3.5	5.0	7.5	10.0	13.0	16.5	15.5
25	12.0	7.0	4.0	2.5	2.5	3.5	5.0	8.0	10.0	13.0	16.5	15.5
26	12.0	7.0	4.0	2.5	2.5	3.5	5.0	8.0	10.0	14.0	16.0	15.5
27	11.5	6.5	4.0	2.5	2.5	3.5	5.0	8.0	10.5	14.0	16.5	15.5
28	11.5	6.5	3.5	2.5	2.5	3.5	5.5	8.0	10.0	14.0	16.5	15.5
29	11.5	6.5	3.5	2.5	---	3.5	6.0	8.0	10.5	13.5	16.5	15.5
30	11.5	6.5	3.0	2.5	---	3.5	6.0	8.0	11.0	14.0	16.0	15.0
31	11.5	---	3.0	2.5	---	3.5	---	8.5	---	14.5	16.5	---
MONTH	13.0	8.5	5.0	2.5	2.5	3.5	4.5	7.0	9.5	12.0	16.0	16.0
YEAR	MAX	17.0	MIN	2.5	MEAN	8.5						

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT.

LOCATION.--Lat 47°37'10", long 112°41'28", near center of east line of sec.36, T.22 N., R.9 W., Lewis and Clark County, Lewis and Clark National Forest, at gaging station 1 mi (1.6 km) downstream from diversion dam, 16.5 mi (26.5 km) northwest of Augusta, and at mile 95.6 (153.8 km).

DRAINAGE AREA.--609 mi^2 (1,577 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1974.
Water temperatures: October 1967 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 301 mg/l Dec. 1-15; minimum, 98 mg/l July 1-20.
Hardness: Maximum, 250 mg/l Dec. 1-15, Jan. 22-31, Feb. 14-28, Mar. 10-20; minimum, 92 mg/l July 1-20.
Specific conductance: Maximum daily, 494 micromhos Dec. 1, Mar. 18; minimum daily, 171 micromhos June 23-27.
Water temperatures: Maximum, 16.0°C Aug. 17; minimum, freezing point January 3-5, 8, 10.

Period of record:
Dissolved solids: Maximum, 301 mg/l Dec. 1-15, 1973; minimum, 98 mg/l July 1-20, 1974.
Hardness: Maximum, 250 mg/l Dec. 1-15, 1973, Jan. 22-31, Feb. 14-28, Mar. 10-20, 1974; minimum, 92 mg/l July 1-20, 1974.
Specific conductance: Maximum daily, 494 micromhos Dec. 1, 1973, Mar. 18, 1974; minimum daily, 170 micromhos on several days in 1972.
Water temperatures: Maximum observed, 18.5°C Aug. 1, 1973; minimum, freezing point on several days during winter periods most years.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Hardness, 91 mg/l July 3. Flow regulated by Gibson Dam. Diversions into two large feeder canals upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	50	--	5.4	10	58	16	2.5	.9	181	0	60
NOV.												
01-30	--	60	--	5.5	10	68	17	2.6	.9	183	0	89
DEC.												
01-15	--	48	--	5.6	10	69	20	3.1	.9	185	0	110
16-31	--	34	--	5.5	10	63	18	3.6	.9	178	0	82
JAN.												
03-21	--	93	--	5.8	180	64	18	3.0	.9	174	0	85
22-31	--	47	--	5.8	20	68	19	2.8	.9	184	0	99
FEB.												
01-13	--	51	--	5.4	10	61	17	2.9	.9	184	0	83
14-28	--	63	--	5.4	0	68	20	3.2	1.2	183	0	110
MAR.												
01-09	--	64	--	5.5	10	64	18	2.2	.9	173	0	98
10-20	--	57	--	5.5	10	67	19	2.2	1.4	175	0	100
21-31	--	61	--	5.4	20	65	18	2.1	1.0	177	0	96
APR.												
01-10	--	37	--	5.4	10	58	15	1.8	.8	173	0	63
11-30	--	34	--	5.4	20	51	14	2.5	.7	168	0	52
MAY												
01-13	--	128	--	5.4	10	44	12	2.0	.8	157	0	40
14-31	--	711	--	5.1	10	37	9.4	1.8	.8	142	0	19
JUNE												
01-14	--	2410	--	5.0	20	32	8.5	1.5	.6	130	0	9.7
15-30	--	4090	--	4.5	50	28	6.5	.7	.5	115	0	5.5
JULY												
01-20	--	371	--	4.0	20	26	6.5	1.5	.5	105	--	7.4
21-31	--	214	--	4.4	20	28	6.4	1.6	.4	114	--	9.7
AUG.												
01-15	--	184	--	4.6	10	33	7.5	1.3	.8	130	--	14
16-31	--	113	--	4.8	10	39	9.0	1.6	.7	143	--	22
SEP.												
01-30	--	91	--	4.5	10	41	11	1.6	.7	151	--	31
WTD. AVG.	--	--	--	4.7	34	33	8.5	1.3	.6	127	--	16
TIME WTD. AVG.	--	391	--	5.1	23	51	14	2.2	.8	160	--	56
TOT. LOAD (TONS)	--	--	--	1820	13	12700	3190	484	230	48900	--	5970

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
04...	1120	82	8.0	5.4	10	59	14	2.7	.8	184	0	69
JAN.												
04...	1200	108	.0	5.9	10	67	18	2.8	.8	189	0	73
MAR.												
29...	1235	66	3.5	5.4	10	69	20	2.9	.9	177	0	110
JULY												
03...	1145	451	9.0	4.2	20	27	5.7	1.5	.5	103	0	7.4

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-31	1.4	.2	.03	.01	234	.32	31.6	210	62	.1	406	8.3
NOV.												
01-30	1.0	.3	.05	.00	275	.37	44.6	240	90	.1	435	8.2
DEC.												
01-15	.7	.3	.13	.01	301	.41	39.0	250	100	.1	487	8.2
16-31	1.2	.3	.13	.00	263	.36	24.1	230	85	.1	449	8.2
JAN.												
03-21	1.2	.4	.11	.00	265	.36	66.5	230	91	.1	450	8.2
22-31	.9	.4	.08	.00	288	.39	36.5	250	97	.1	481	8.2
FEB.												
01-13	.9	.4	.08	.00	263	.36	36.2	220	71	.1	440	8.1
14-28	.9	1.0	.05	.00	300	.41	51.0	250	100	.1	492	8.1
MAR.												
01-09	.8	.3	.08	.01	275	.37	47.5	230	92	.1	456	8.0
10-20	.9	.2	.04	.01	283	.38	43.6	250	100	.1	477	8.0
21-31	.9	.3	.00	.00	276	.38	45.5	240	91	.1	465	7.5
APR.												
01-10	1.6	.3	.02	.00	231	.31	23.1	210	65	.1	414	8.2
11-30	1.1	.2	.03	.00	210	.29	19.3	190	47	.1	357	7.7
MAY												
01-13	.2	.2	.00	.00	182	.25	62.9	160	31	.1	311	8.3
14-31	1.1	.1	.02	.00	144	.20	276	130	15	.1	256	8.3
JUNE												
01-14	.7	.1	.00	.00	122	.17	794	120	8	.1	221	8.1
15-30	.5	.1	.00	.00	103	.14	1140	97	2	.0	189	7.6
JULY												
01-20	.6	.1	.01	.00	98	.13	98.2	92	6	.1	183	--
21-31	.6	.1	.00	.00	107	.15	61.8	96	3	.1	199	--
AUG.												
01-15	.6	.1	.00	.01	126	.17	62.6	110	7	.1	230	--
16-31	.6	.2	.00	.00	148	.20	45.2	130	17	.1	269	--
SEP.												
01-30	.7	.1	.01	.00	165	.22	40.5	150	24	.1	290	--
WTD. AVG.	.7	.1	.01	.00	127	.17	--	118	12	.1	228	--
TIME WTD. AVG.	.9	.2	.04	.00	209	.28	--	184	53	.1	356	--
TOT. LOAD (TONS)	252	47	2.9	.17	48800	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

OCT.												
04...	1.8	.2	.00	.01	244	.33	54.2	210	54	.1	398	8.2
JAN.												
04...	1.9	.3	.14	.02	264	.36	77.0	240	86	.1	459	8.2
MAR.												
29...	1.1	.6	.05	.01	297	.40	53.3	250	110	.1	482	8.2
JULY												
03...	.7	.1	.00	.02	98	.13	119	91	6	.1	175	8.2

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT.			
04...	1120	82	.01
NOV.			
14...	1000	66	.03
DEC.			
05...	1100	47	.07
JAN.			
04...	1200	108	.02
29...	1030	34	.02
MAR.			
11...	1315	49	.01
29...	1235	66	.01
APR.			
29...	1000	28	.05
MAY			
29...	1015	2730	.00
AUG.			
08...	1500	171	.01
SEP.			
04...	1130	84	.00

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	392	419	494	---	418	465	457	386	250	178	202	270
2	392	408	478	---	418	465	449	386	239	180	207	272
3	401	408	454	431	408	469	449	385	233	174	207	272
4	401	408	486	---	413	483	397	398	221	174	218	272
5	401	---	460	444	413	473	373	385	229	175	218	272
6	401	393	485	448	413	473	360	385	227	183	218	272
7	397	398	482	455	410	444	360	357	228	182	219	277
8	401	411	474	455	410	374	353	337	221	182	219	277
9	394	430	468	444	432	437	349	308	219	182	227	275
10	397	447	460	444	432	443	349	293	221	182	238	277
11	397	478	460	449	432	443	346	280	212	183	240	275
12	407	469	460	454	432	451	346	280	209	181	240	277
13	404	469	460	455	433	451	346	283	209	183	240	277
14	401	460	454	455	486	481	341	265	208	183	250	277
15	407	454	454	433	482	481	341	255	196	183	250	277
16	407	454	448	440	461	444	341	253	196	184	252	277
17	407	454	454	397	485	492	341	251	196	184	252	277
18	408	462	454	416	490	494	341	255	188	189	256	281
19	408	436	447	445	479	489	341	236	185	187	256	284
20	408	424	448	434	486	478	340	236	173	187	258	284
21	408	---	448	422	472	465	340	236	174	193	258	281
22	408	425	441	471	457	472	340	238	173	193	258	281
23	408	431	447	471	478	432	340	238	171	195	258	281
24	408	436	441	478	478	432	341	236	171	198	258	291
25	413	443	446	474	474	441	348	234	171	199	267	280
26	413	442	445	448	474	470	348	236	171	199	267	282
27	413	442	434	459	474	441	360	236	171	199	267	279
28	412	449	---	466	467	442	364	227	173	199	279	279
29	412	441	410	480	---	476	352	234	173	205	265	279
30	418	436	423	465	---	461	360	236	173	208	272	279
31	418	---	433	433	---	461	---	234	---	206	272	---
MONTH	405	437	455	449	450	459	360	284	199	188	245	278
YEAR	MAX	494	MIN	171	MEAN	349						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	2.5	2.0	---	0.5	2.0	2.0	4.0	6.5	8.0	---	12.5
2	8.5	2.5	2.0	---	1.0	1.0	3.0	5.0	7.0	9.0	---	11.0
3	7.5	2.0	2.0	0.0	1.5	0.5	2.0	4.5	7.5	8.0	12.0	12.0
4	6.5	1.0	1.5	0.0	1.0	0.5	2.0	6.0	8.0	9.0	13.5	12.5
5	7.0	0.5	0.5	0.0	0.5	1.5	3.0	10.5	7.0	9.5	13.0	13.0
6	6.0	0.5	2.5	0.5	0.5	0.5	4.0	9.0	7.5	8.5	14.0	14.0
7	5.5	0.5	1.5	0.5	0.5	0.5	3.0	7.5	7.0	10.0	14.5	12.5
8	5.0	1.0	1.5	0.0	0.5	1.0	2.0	8.0	6.5	8.5	14.0	14.0
9	6.0	1.5	0.5	0.5	1.5	0.5	2.5	7.0	7.0	9.5	14.0	12.5
10	5.0	3.5	2.0	0.0	1.5	0.5	3.5	6.0	7.0	10.0	14.0	13.0
11	5.0	4.5	2.0	0.5	1.5	1.0	3.0	8.5	7.0	9.5	14.0	11.5
12	5.5	3.5	1.5	1.0	1.5	1.0	2.0	6.5	7.5	9.0	15.0	11.5
13	7.0	2.5	2.0	1.0	1.5	1.5	2.5	5.5	7.5	9.0	14.0	10.5
14	10.0	2.5	1.0	0.5	1.0	1.0	2.5	5.0	8.0	10.0	14.0	12.0
15	6.5	3.0	1.5	3.0	1.5	0.5	3.0	5.0	8.0	10.0	15.0	13.0
16	5.0	3.5	4.0	3.5	2.5	3.0	3.0	5.5	8.0	10.5	15.5	12.0
17	4.5	3.0	3.0	2.0	2.0	2.5	2.0	5.5	9.0	10.0	16.0	12.5
18	8.5	1.5	2.5	2.5	2.5	2.0	2.0	5.5	9.0	10.5	13.5	11.5
19	5.5	0.5	0.5	2.0	2.0	1.5	4.0	6.5	8.5	10.5	15.0	11.5
20	5.0	0.5	2.0	1.5	1.0	0.5	3.0	5.5	8.5	11.0	14.0	13.5
21	8.5	1.0	3.0	0.5	0.5	2.0	4.0	5.0	9.5	12.0	13.5	12.0
22	10.0	1.5	4.0	1.0	1.0	1.5	4.0	5.5	8.5	10.5	13.0	14.0
23	5.5	2.0	1.0	1.0	1.0	0.5	4.0	5.5	9.0	11.0	14.0	11.0
24	6.0	2.5	0.5	2.0	1.0	3.0	5.5	6.0	8.5	10.0	14.0	10.5
25	5.0	2.0	0.5	2.0	1.0	2.0	6.0	7.0	9.5	10.5	15.0	12.0
26	4.5	1.5	1.0	2.0	1.5	2.5	7.0	7.0	9.5	9.5	14.0	12.5
27	4.0	1.0	0.5	1.5	1.0	2.5	5.5	7.5	9.0	10.0	14.5	11.0
28	2.5	3.0	0.5	1.0	1.0	3.5	5.0	7.0	8.5	9.5	15.0	10.0
29	6.0	1.5	0.5	1.5	---	3.0	5.0	7.0	8.5	---	12.5	9.5
30	5.0	3.0	0.5	0.5	---	2.5	6.0	6.0	8.5	---	15.0	10.0
31	3.5	---	0.5	0.5	---	2.0	---	6.0	---	---	13.0	---
MONTH	6.0	2.0	1.5	1.0	1.0	1.5	3.5	6.5	8.0	10.0	14.0	12.0
YEAR	MAX	16.0	MIN	0.0	MEAN	5.5						

06088300 MUDDY CREEK NEAR VAUGHN, MT.

LOCATION.--Lat 47°37'30", long 111°38'05", in NW¼NE¼ sec.32, T.22 N., R.1 E., Cascade County, at gaging station at bridge on county road and 6.2 mi (10.0 km) northwest of Vaughn.

DRAINAGE AREA.--282 mi^2 (730 km^2).

PERIOD OF RECORD.--Chemical analyses: July 1968 to September 1974.
Water temperatures: July 1968 to September 1974.
Sediment records: July 1968 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 1,040 mg/l Feb. 20-28; minimum, 313 mg/l June 1-13.
Hardness: Maximum, 540 mg/l Feb. 20-28, Mar. 1-15; minimum, 230 mg/l June 1-13.
Specific conductance: Maximum daily, 1,790 micromhos Feb. 23; minimum daily, 465 micromhos June 7.
Water temperatures: Maximum, 25.5°C June 19; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 2,010 mg/l May 13; minimum daily, 11 mg/l Oct. 30.
Sediment discharge: Maximum daily, 2,320 tons (2,100 tonnes) Aug. 9; minimum daily, 1.6 tons (1.5 tonnes) Oct. 30.
Period of record:
Dissolved solids: Maximum, 2,280 mg/l Apr. 28 to May 12, 1970; minimum, 310 mg/l June 1-30, 1972.
Hardness: Maximum, 939 mg/l Apr. 28 to May 12, 1970; minimum, 216 mg/l June 15-30, 1970.
Specific conductance: Maximum daily, 4,130 micromhos May 11, 1970, minimum daily, 365 micromhos Feb. 20, 1969.
Water temperatures: Maximum, 25.5°C July 23, 1971, July 10, 1973, June 19, 1974; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 4,230 mg/l Mar. 21, 1969; minimum daily observed, 11 mg/l Oct. 19, 1968, Oct. 19, 1972, Oct. 30, 1973.
Sediment discharge: Maximum daily, 10,700 tons (9,710 tonnes) Mar. 19, 1969; minimum daily, 0.84 ton (0.76 tonne) Jan. 8, 1973.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Dissolved solids, 306 mg/l June 5. Flow affected by ice during most of winter months. Natural flow increased by wastage from Greenfields Irrigation Project.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-17	--	70	--	5.8	10	45	64	61	2.3	314	11	210
18-31	--	54	--	4.5	10	51	68	71	2.5	335	6	270
NOV.												
01-10	--	49	--	8.8	10	46	67	71	2.3	343	0	240
11-20	--	49	--	8.5	20	47	71	78	2.5	323	0	290
21-30	--	44	--	8.5	10	53	65	69	2.1	353	0	220
DEC.												
01-13	--	49	--	8.5	20	52	70	73	2.4	347	0	260
14-31	--	37	--	8.5	10	59	73	76	2.4	368	0	280
JAN.												
01-17	--	31	--	9.3	80	60	68	77	4.4	320	0	310
18-31	--	39	--	9.2	20	68	73	89	3.6	347	5	350
FEB.												
01-19	--	44	--	8.8	10	68	74	84	2.8	382	0	320
20-28	--	44	--	8.1	0	74	87	140	3.8	381	0	520
MAR.												
01-15	--	40	--	7.9	20	75	86	120	2.7	366	0	470
16-31	--	37	--	7.3	20	71	82	100	2.6	356	0	420
APR.												
01-15	--	29	--	4.2	20	54	70	91	2.7	336	0	330
16-30	--	27	--	4.4	10	60	77	96	3.0	356	0	340
MAY												
01-10	--	25	--	3.7	10	50	76	100	3.1	318	0	380
11-31	--	176	--	8.9	10	49	32	29	1.9	223	0	130
JUNE												
01-13	--	153	--	7.2	20	40	29	25	2.0	242	0	82
14-30	--	189	--	8.5	20	40	38	36	2.8	276	0	100
JULY												
01-09	--	273	--	7.4	20	40	34	28	2.1	256	--	82
10-18	--	277	--	7.4	20	41	36	30	2.2	263	--	81
19-31	--	222	--	8.1	20	45	41	34	2.5	302	--	94
AUG.												
01-14	--	390	--	8.0	10	40	32	28	2.4	269	--	90
15-31	--	183	--	7.8	10	47	43	39	2.5	312	--	120
SEP.												
01-15	--	148	--	6.3	10	45	45	40	.9	301	6	120
16-30	--	114	--	5.2	10	49	45	40	.9	303	--	130
WTD. AVG.	--	--	--	7.6	15	49	45	45	2.3	290	2	153
TIME WTD. AVG.	--	105	--	7.4	17	54	59	66	2.5	319	1	239
TOT. LOAD (TONS)	--	--	--	791	2	5040	4710	4650	237	30200	91	15900

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
16...	1200	60	6.0	5.7	80	43	65	63	2.0	338	3	210
JAN.												
16...	1440	125	.5	7.0	60	54	73	94	7.7	197	0	430
APR.												
12...	0835	27	4.0	3.1	20	65	77	92	2.3	370	0	380
JUNE												
05...	1620	141	16.0	5.5	20	44	28	23	1.7	233	0	84

06088300 MUDDY CREEK NEAR VAUGHN, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-17	4.9	1.1	1.4	.00	566	.77	107	380	100	1.4	895	8.4
18-31	5.9	1.1	1.4	.00	651	.89	94.9	410	120	1.5	994	8.4
NOV.												
01-10	5.8	1.1	2.0	.02	620	.84	82.0	390	110	1.6	988	8.3
11-20	7.0	1.1	1.8	.03	672	.91	88.9	410	140	1.7	1060	8.3
21-30	5.6	1.1	1.9	.02	607	.83	72.1	400	110	1.5	987	8.2
DEC.												
01-13	6.9	1.1	2.0	.00	654	.89	86.5	420	130	1.6	1020	8.2
14-31	7.4	.9	2.2	.01	698	.95	69.7	450	150	1.6	1080	8.2
JAN.												
01-17	8.8	1.1	2.5	.03	708	.96	59.3	430	170	1.6	1090	8.3
18-31	8.6	1.1	2.5	.00	790	1.07	83.2	470	180	1.8	1180	8.4
FEB.												
01-19	8.0	1.4	2.4	.00	766	1.04	91.0	470	160	1.7	1180	8.3
20-28	11	1.2	2.3	.02	1040	1.41	124	540	230	2.6	1500	8.3
MAR.												
01-15	9.9	1.0	2.3	.01	963	1.31	104	540	240	2.2	1390	8.1
16-31	9.7	1.0	2.4	.00	880	1.20	87.9	520	220	1.9	1310	8.1
APR.												
01-15	9.0	1.0	1.5	.00	734	1.00	57.5	420	150	1.9	1190	8.2
16-30	10	1.1	1.7	.01	775	1.05	56.5	470	170	1.9	1230	8.3
MAY												
01-10	10	1.1	1.2	.00	786	1.07	53.1	440	180	2.1	1220	8.3
11-31	3.0	.4	.26	.00	365	.50	173	250	71	.8	590	7.9
JUNE												
01-13	2.2	.5	.04	.01	313	.43	129	230	36	.7	526	7.8
14-30	3.0	.7	.33	.01	373	.51	190	270	45	1.0	624	8.0
JULY												
01-09	2.4	.6	.49	.00	325	.44	240	240	30	.8	553	--
10-18	2.5	.6	.34	.01	332	.45	248	250	35	.8	576	--
19-31	3.0	.7	.02	.00	377	.51	226	280	33	.9	645	--
AUG.												
01-14	2.6	.6	.28	.01	344	.47	362	250	26	.8	575	--
15-31	3.8	.8	.69	.01	421	.57	208	290	38	1.0	706	--
SEP.												
01-15	3.2	.8	.92	.00	420	.57	168	300	41	1.0	675	--
16-30	3.3	.7	.72	.00	427	.58	131	310	59	1.0	708	--
WTD. AVG.	4.0	.7	.76	.01	454	.62	--	307	68	1.1	735	--
TIME WTD. AVG.	6.0	.9	1.4	.01	598	.81	--	378	115	1.4	939	--
TOT. LOAD (TONS)	420	77	79	.64	47200	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
16...	5.2	1.0	1.6	.02	572	.78	105	380	93	1.4	953	8.4
JAN.												
16...	13	.7	2.6	.17	789	1.07	266	440	270	2.0	1190	7.6
APR.												
12...	8.5	1.2	1.6	.00	799	1.09	58.2	480	180	1.8	1180	8.3
JUNE												
05...	2.3	.4	.39	.02	306	.42	116	230	34	.7	517	8.3

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT.			
16...	1200	68	.04
NOV.			
14...	1100	52	.02
DEC.			
20...	1445	42	.01
JAN.			
16...	1440	125	.26
FEB.			
08...	1130	36	.05
MAR.			
12...	1245	43	.03
APR.			
12...	0835	27	.00
MAY			
13...	1530	189	.02
JUNE			
05...	1610	141	.09
AUG.			
14...	1300	454	.02
SEP.			
04...	1310	161	.01

06088300 MUDDY CREEK NEAR VAUGHN, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) • WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	845	969	1030	1070	1330	1280	1320	1400	522	524	590	679
2	917	969	997	1110	1180	1440	1240	1290	612	538	589	679
3	957	1050	997	1120	1020	1660	1220	1270	522	590	589	712
4	864	1040	1010	1100	1050	1700	1140	1220	531	590	567	725
5	891	1040	1040	1160	1020	1440	1200	1240	512	523	559	698
6	873	1120	1070	1150	1030	1380	1180	1230	533	506	603	722
7	838	1040	945	1150	1030	1270	1160	1250	465	524	560	689
8	912	1010	966	1110	1020	1280	1070	1240	478	533	579	668
9	883	951	1010	1080	1020	1230	1070	1190	487	563	552	706
10	868	946	1020	1080	1020	1370	1150	1190	474	552	537	697
11	886	1040	915	1150	1060	1360	1110	625	543	542	579	706
12	914	1160	1040	1140	1070	1260	1140	633	542	536	556	720
13	864	1080	1000	1040	1190	1230	1130	533	591	561	563	699
14	864	1040	1080	1050	1230	1340	1130	509	680	592	569	650
15	934	1040	1080	1040	1250	1320	1080	596	680	534	615	671
16	901	1020	978	1110	1270	1130	1080	666	651	563	627	671
17	878	978	1000	1040	1240	1170	1150	528	652	552	714	756
18	934	1080	1080	1170	1250	1150	1150	586	671	576	714	756
19	972	1160	1040	1120	1250	1220	1150	594	636	631	699	771
20	1030	1080	1080	1200	1520	1380	1100	559	707	621	766	768
21	969	1030	1010	1200	1390	1320	1080	648	802	611	731	712
22	1000	1010	975	1200	1450	1270	1110	621	718	648	716	635
23	1050	1000	1080	1150	1790	1320	1150	567	599	637	699	648
24	1030	978	1080	1110	1520	1160	1140	625	575	649	716	663
25	997	1010	1080	1070	1390	1210	1140	656	587	634	---	692
26	1000	991	1040	1080	1240	1440	1150	595	666	649	679	754
27	951	1010	1030	1130	1290	1450	1190	497	625	612	682	749
28	934	954	1070	1150	1390	1380	1300	488	574	612	696	654
29	969	946	1100	1100	---	1410	1480	560	542	582	696	654
30	960	1010	1090	1210	---	1320	1480	520	518	607	714	671
31	960	---	1080	1310	---	1320	---	585	---	584	701	---
MONTH	930	1030	1030	1130	1230	1330	1170	797	590	580	639	699
YEAR	MAX	1790	MIN	465	MEAN	928						

TEMPERATURE (DEG. C) OF WATER • WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.5	1.0	0.0	0.0	0.5	1.0	4.0	10.0	15.0	22.0	19.5	13.5
2	9.0	0.0	0.5	0.0	0.5	1.0	3.5	7.5	17.0	20.0	21.0	17.5
3	5.0	0.0	0.0	0.0	0.5	1.5	3.5	16.5	15.5	15.0	19.5	12.0
4	6.0	0.0	0.0	0.0	0.0	1.0	9.0	9.5	18.0	15.5	22.5	13.0
5	6.5	0.0	0.0	0.0	0.5	1.0	11.0	19.5	13.5	18.5	23.5	11.0
6	6.0	0.0	0.0	0.0	0.5	1.0	9.0	12.5	15.5	19.5	18.5	11.5
7	9.0	0.0	0.0	0.0	0.5	0.5	3.0	10.0	14.0	19.0	19.5	14.5
8	4.0	0.0	0.0	0.0	0.5	0.0	9.0	10.0	11.5	20.5	14.0	14.5
9	4.5	0.0	0.0	0.0	0.5	1.5	8.0	10.0	16.0	21.0	13.5	12.0
10	3.5	0.0	0.0	0.0	1.5	5.0	6.5	8.0	18.5	21.0	14.5	11.5
11	5.0	2.0	0.5	0.0	1.0	5.0	10.0	13.5	21.5	15.5	17.5	7.5
12	6.0	1.0	0.0	0.0	1.0	1.0	4.5	10.0	22.0	16.5	18.0	7.5
13	11.0	1.5	0.0	0.0	1.0	4.5	4.0	6.5	23.5	22.5	13.5	7.5
14	10.5	2.5	0.0	0.0	1.0	0.5	12.0	7.0	14.0	23.5	16.0	15.5
15	8.0	0.5	0.0	0.0	1.5	1.0	12.0	7.0	24.5	21.0	19.0	16.5
16	6.0	2.0	2.0	1.0	1.0	4.5	12.0	6.0	25.0	23.5	20.5	17.0
17	5.5	2.0	2.0	1.5	1.0	7.0	7.0	6.0	23.5	24.0	21.5	10.5
18	8.0	0.0	0.0	1.0	1.0	1.0	8.0	9.0	24.0	23.5	21.5	12.0
19	7.5	0.0	0.0	1.0	1.0	1.5	8.0	9.5	25.5	24.0	---	13.0
20	8.0	0.0	0.5	1.0	0.5	1.0	12.0	7.0	22.0	24.0	15.0	9.5
21	10.5	0.0	1.0	0.5	1.0	1.0	12.0	5.0	21.0	23.0	19.5	14.5
22	6.5	0.0	1.0	0.5	1.0	1.5	7.5	6.0	23.0	22.5	20.0	15.0
23	8.0	0.0	1.0	0.5	2.5	1.0	9.5	10.0	24.5	22.5	21.0	14.0
24	7.0	0.0	0.0	0.5	0.5	3.0	10.0	13.0	24.5	19.5	---	10.0
25	7.5	0.0	0.0	0.5	1.0	2.0	12.0	10.5	24.0	22.5	---	10.5
26	3.5	0.0	0.0	1.0	1.0	6.0	12.5	16.0	20.0	17.0	20.0	10.0
27	4.0	0.0	0.0	1.0	1.0	5.5	6.5	13.5	21.0	22.0	21.5	7.0
28	9.5	0.0	0.0	0.5	0.5	6.5	8.0	11.5	20.5	22.5	18.0	11.0
29	6.5	0.5	0.0	1.0	---	3.5	7.0	10.0	19.0	23.0	18.0	7.5
30	5.5	1.0	0.0	0.0	---	6.5	9.0	9.5	21.0	21.5	15.0	5.5
31	3.5	---	0.0	0.0	---	9.0	---	10.0	---	21.0	14.0	---
MONTH	7.0	0.5	0.5	0.5	1.0	3.0	8.5	10.0	20.0	21.0	18.5	12.0
YEAR	MAX	25.5	MIN	0.0	MEAN	8.5						

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
MAY											
13...	1310	7.5	185	2060	1030	40	59	92	99	100	--
JUNE											
06...	1030	10.0	142	250	96	42	62	83	93	100	--
AUG.											
14...	1240	13.0	446	579	697	38	50	79	92	98	100

06088300 MUDDY CREEK NEAR VAUGHN, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	82	44	9.7	57	17	2.6	51	82	11
2	76	59	12	50	76	10	47	84	11
3	72	61	12	50	83	11	48	74	9.6
4	74	149	30	48	79	10	47	70	8.9
5	72	107	21	46	62	7.7	48	94	12
6	68	70	13	45	61	7.4	55	78	12
7	69	45	8.4	44	83	9.9	57	83	13
8	68	58	11	46	55	6.8	46	65	8.1
9	71	54	10	52	63	8.8	51	72	9.9
10	71	46	8.8	56	98	15	58	65	10
11	69	40	7.5	60	185	30	46	99	12
12	72	43	8.4	62	152	25	42	90	10
13	68	35	6.4	59	75	12	41	65	7.2
14	66	30	5.3	52	59	8.3	41	61	6.8
15	65	39	6.8	51	102	14	46	64	7.9
16	67	60	11	51	90	12	51	99	14
17	63	52	8.8	49	72	9.5	44	98	12
18	58	58	9.1	37	89	8.9	38	61	6.3
19	56	66	10	36	114	11	43	42	4.9
20	55	65	9.7	35	92	8.7	50	63	8.5
21	53	24	3.4	34	160	15	47	86	11
22	51	53	7.3	34	113	10	43	109	13
23	52	57	8.0	34	85	7.8	39	89	9.4
24	52	39	5.5	35	97	9.2	36	66	6.4
25	51	21	2.9	39	93	9.8	33	64	5.7
26	56	41	6.2	43	83	9.6	30	76	6.2
27	56	37	5.6	50	90	12	28	62	4.7
28	55	18	2.7	55	82	12	26	66	4.6
29	54	35	5.1	62	100	17	24	58	3.8
30	53	11	1.6	54	108	16	22	50	3.0
31	55	19	2.8	--	--	--	20	49	2.6
TOTAL	1950	--	270.0	1426	--	347.0	1298	--	265.5

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	19	46	2.4	28	123	9.3	46	146	18
2	18	58	2.8	30	119	9.6	48	140	18
3	17	54	2.5	35	123	12	39	184	19
4	17	40	1.8	33	105	9.4	34	208	22
5	18	58	2.8	32	64	5.5	43	212	25
6	19	62	3.2	35	82	7.7	40	170	18
7	20	59	3.2	36	81	7.9	38	237	20
8	19	64	3.3	38	82	8.4	43	199	23
9	18	102	5.0	40	96	10	40	226	27
10	18	93	4.5	43	142	16	38	263	29
11	18	94	4.6	45	97	12	40	270	29
12	21	106	6.0	48	108	14	42	221	25
13	23	105	6.5	52	106	15	41	237	26
14	25	90	6.1	54	102	15	33	230	22
15	28	189	14	56	121	18	36	242	24
16	125	316	107	59	101	16	42	289	33
17	100	293	79	56	124	19	44	314	37
18	80	113	24	59	82	13	39	346	36
19	60	140	23	48	88	11	34	337	31
20	50	91	12	47	81	10	30	275	24
21	45	52	6.3	46	88	11	36	304	32
22	40	72	7.8	45	99	12	38	277	25
23	36	86	8.4	44	186	22	39	338	38
24	34	82	7.5	44	149	18	42	406	50
25	32	94	8.1	44	125	15	39	321	34
26	30	121	9.8	44	122	14	38	368	38
27	28	135	10	42	103	12	38	253	26
28	27	89	6.5	40	123	13	35	248	24
29	26	109	7.7	--	--	--	34	231	21
30	26	128	9.0	--	--	--	33	186	17
31	27	131	9.5	--	--	--	34	213	20
TOTAL	1064	--	404.3	1223	--	354.8	1190	--	840

06088300 MUDDY CREEK NEAR VAUGHN, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	30	165	13	24	143	9.3	144	253	98
2	31	145	12	24	118	7.6	110	186	55
3	31	114	9.5	24	101	6.5	133	352	126
4	30	79	6.4	23	138	8.6	132	249	89
5	29	49	3.8	23	114	7.1	155	369	154
6	29	51	4.0	23	147	9.1	132	235	84
7	27	44	3.2	23	138	8.6	179	466	225
8	27	43	3.1	23	134	8.3	172	308	143
9	27	56	4.1	22	125	7.4	184	344	171
10	28	70	5.3	37	239	24	215	616	358
11	29	65	5.1	100	1230	361	160	380	164
12	28	66	5.0	96	1040	269	150	286	115
13	28	57	4.3	204	2010	1110	122	226	74
14	27	70	5.1	184	1220	606	102	175	48
15	27	71	5.2	105	456	129	88	124	29
16	26	85	6.0	100	456	123	90	95	23
17	27	74	5.4	143	688	266	103	160	44
18	26	87	6.1	120	386	126	112	207	63
19	26	110	7.7	118	444	161	109	196	58
20	26	101	7.1	233	1490	937	107	181	52
21	26	86	6.0	330	1870	1670	239	837	563
22	26	106	7.4	324	1400	1220	180	445	214
23	25	101	6.8	259	810	566	212	546	313
24	25	105	7.1	171	498	230	265	609	436
25	25	100	6.8	146	361	142	265	531	380
26	24	88	5.7	157	365	166	228	468	288
27	29	118	9.2	196	560	296	219	463	274
28	32	138	12	184	419	208	259	515	360
29	31	161	13	163	355	156	289	643	502
30	26	156	11	189	440	225	345	924	861
31	--	--	--	171	299	138	--	--	--
TOTAL	828	--	206.4	3936	--	9197.5	5290	--	6366

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	319	574	494	239	202	130	159	92	39
2	261	385	271	251	221	150	155	83	35
3	219	323	191	257	263	182	156	74	31
4	221	357	213	258	272	189	158	95	41
5	269	522	379	294	309	245	160	132	57
6	305	557	459	289	290	226	155	123	51
7	289	407	318	350	361	341	152	92	38
8	281	359	272	583	951	1500	149	76	31
9	295	381	303	682	1260	2320	146	96	38
10	285	351	270	510	789	1090	147	104	41
11	358	468	452	434	664	778	141	91	35
12	320	356	308	378	497	507	141	78	30
13	267	298	215	500	639	863	137	66	24
14	259	257	180	438	562	665	134	81	29
15	307	359	298	337	543	494	126	71	24
16	257	252	175	251	450	305	114	51	16
17	238	258	166	171	314	145	111	66	20
18	202	204	111	156	232	98	106	79	23
19	186	159	80	159	264	113	99	138	37
20	184	155	77	210	366	208	95	73	19
21	176	181	86	199	270	145	95	68	17
22	189	214	109	187	217	110	117	108	34
23	187	193	97	177	172	82	125	85	29
24	189	198	101	171	176	81	115	69	21
25	206	204	113	165	131	58	111	77	23
26	226	267	163	159	112	48	108	65	19
27	249	277	186	155	120	50	128	80	28
28	225	262	159	154	116	48	131	57	20
29	303	370	303	153	104	43	128	65	22
30	289	302	236	151	96	39	133	58	21
31	273	265	195	156	111	47	--	--	--
TOTAL	7834	--	6980	8574	--	11400	3932	--	893

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	38455
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	37524.5

06088500 MUDDY CREEK AT VAUGHN, MT.

LOCATION.--Lat 47°33'42", long 111°32'33", near center of S½NE¼ sec.24, T.21 N., R.1 E., Cascade County, at gaging station at old highway bridge at Vaughn, 1.5 mi (2.4 km) upstream from mouth.

DRAINAGE AREA.--314 mi² (813 km²).

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1968, July 1972 to September 1974.
Water temperatures: October 1967 to September 1968, July 1971 to September 1974.
Sediment records: October 1967 to September 1968 (monthly), July 1971 to September 1974 (daily).

EXTREMES.--1973-74:
Dissolved solids: Maximum, 1,060 mg/l Feb. 20-28; minimum, 311 mg/l June 1-14.
Hardness: Maximum, 560 mg/l Feb. 20-28; minimum, 230 mg/l June 1-14.
Specific conductance: Maximum daily, 1,760 micromhos Feb. 24; minimum daily, 470 micromhos June 8.
Water temperatures: Maximum, 25.5°C June 18; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 4,100 mg/l May 21; minimum daily, 40 mg/l Oct. 7.
Sediment discharge: Maximum daily, 7,060 tons (6,400 tonnes) Aug. 9; minimum daily, 3.7 tons (3.4 tonnes) Jan. 2.
Period of record:
Dissolved solids: Maximum, 1,470 mg/l Apr. 23-30, 1973; minimum, 311 mg/l June 1-14, 1974.
Hardness: Maximum, 680 mg/l Apr. 23-30, 1973; minimum, 227 mg/l July 8-18, 1968.
Specific conductance: Maximum daily, 2,420 micromhos Apr. 25, 1973; minimum daily, 470 micromhos June 8, 1974.
Water temperatures: Maximum, 25.5°C June 18, 1974; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 13,500 mg/l July 4, 1971; minimum daily, 10 mg/l Feb. 10, 1973.
Sediment discharge: Maximum daily, 13,100 tons (11,900 tonnes) July 4, 1971; minimum daily, 0.68 ton (0.62 tonne) Feb. 10, 1973.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Dissolved solids, 277 mg/l June 5; hardness, 210 mg/l June 5. Flow affected by ice during most of winter months. Natural flow increased by wastage from Sun River Canal and by return flow from irrigation.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	90	--	4.9	10	53	61	66	2.5	311	0	250
NOV.												
01-21	--	68	--	8.4	10	53	67	76	2.7	314	0	290
22-30	--	54	--	8.5	10	46	69	76	2.3	318	0	290
DEC.												
01-17	--	57	--	7.9	10	59	71	80	2.5	342	0	300
18-31	--	38	--	8.1	10	64	76	86	2.4	359	0	320
JAN.												
01-31	--	37	--	9.0	190	68	66	86	4.2	321	0	360
FEB.												
01-19	--	45	--	8.8	80	72	74	88	3.2	370	0	360
20-28	--	51	--	7.6	10	83	86	140	3.8	366	0	540
MAR.												
01-09	--	41	--	7.9	20	80	86	130	3.0	354	0	520
10-20	--	39	--	7.9	10	71	77	100	2.4	345	0	410
21-31	--	40	--	7.5	10	76	85	110	2.6	350	0	460
APR.												
01-14	--	30	--	3.5	10	56	79	100	3.1	321	0	360
15-30	--	26	--	4.0	10	58	80	100	3.1	332	0	400
MAY												
01-10	--	21	--	2.5	10	68	80	120	3.5	330	0	450
11-22	--	192	--	12	10	53	31	36	2.4	221	0	160
23-31	--	249	--	8.1	10	51	29	30	1.9	221	0	120
JUNE												
01-14	--	204	--	7.4	20	46	28	25	1.8	227	0	88
15-30	--	235	--	8.0	20	49	35	34	2.7	261	0	110
JULY												
01-13	--	324	--	7.7	20	47	33	30	2.2	255	--	93
14-31	--	302	--	8.2	20	58	39	35	2.5	304	--	110
AUG.												
01-14	--	502	--	8.5	20	53	32	31	2.7	278	--	110
15-31	--	299	--	7.7	10	57	40	40	2.3	315	--	140
SEP.												
01-11	--	217	--	6.3	10	49	44	41	1.2	282	4	140
12-30	--	183	--	5.3	10	54	43	44	.9	292	--	150
WTD. AVG.	--	--	--	7.8	29	54	43	46	2.3	286	0	167
TIME WTD. AVG.	--	136	--	7.3	31	58	59	69	2.6	309	0	265
TOT. LOAD (TONS)	--	--	--	1040	3	7250	5820	6150	314	38400	26	22400

ANALYSES OF ADDITIONAL SAMPLES

OCT.												
16...	1530	76	8.5	4.5	20	37	67	68	2.3	336	0	240
JAN.												
09...	1530	25	.0	11	10	81	75	87	2.7	444	0	320
APR.												
11...	1415	30	10.5	2.5	20	71	79	100	2.5	342	0	400
JUNE												
05...	1420	240	13.0	5.4	20	43	25	19	1.4	205	0	79

06088500 MUDDY CREEK AT VAUGHN, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO-PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-31	4.7	.8	.93	.01	600	.82	146	380	130	1.5	940	8.3
NOV.												
01-21	8.6	.9	1.9	.03	668	.91	123	410	150	1.6	1030	8.3
22-30	8.2	1.1	2.0	.02	665	.90	97.0	400	140	1.7	1020	8.3
DEC.												
01-17	7.4	1.0	1.9	.03	706	.96	109	440	160	1.7	1090	8.3
18-31	7.9	1.1	2.0	.03	751	1.02	77.1	470	180	1.7	1150	8.2
JAN.												
01-31	8.5	1.0	2.3	.02	771	1.05	77.0	440	180	1.8	1160	8.1
FEB.												
01-19	8.4	1.1	2.2	.00	808	1.10	98.2	480	180	1.7	1220	8.2
20-28	12	1.5	2.2	.00	1060	1.44	146	560	260	2.6	1540	8.3
MAR.												
01-09	12	.9	2.1	.02	1020	1.39	113	550	260	2.4	1460	8.2
10-20	9.1	.9	2.0	.01	857	1.17	90.2	490	210	2.0	1300	8.0
21-31	11	1.0	1.9	.00	934	1.27	101	540	250	2.1	1390	7.8
APR.												
01-14	9.5	.9	1.0	.00	775	1.05	62.0	470	200	2.0	1270	8.0
15-30	10	1.1	1.4	.00	826	1.12	58.0	470	200	2.0	1260	8.1
MAY												
01-10	11	1.1	.95	.00	903	1.23	51.2	510	240	2.3	1370	8.1
11-22	3.8	.5	.45	.00	410	.56	213	260	79	1.0	671	7.8
23-31	3.4	.4	.16	.00	353	.48	237	250	65	.8	580	8.0
JUNE												
01-14	2.3	.5	.08	.00	311	.42	171	230	44	.7	514	8.1
15-30	2.8	.6	.55	.00	374	.51	237	270	52	.9	624	7.9
JULY												
01-13	2.4	.5	.15	.00	342	.47	299	250	44	.8	583	--
14-31	3.0	.6	.01	.00	403	.55	329	300	49	.9	675	--
AUG.												
01-14	2.6	.5	.20	.01	379	.52	514	260	36	.8	633	--
15-31	3.5	.7	.47	.01	449	.61	382	310	49	1.0	739	--
SEP.												
01-11	3.1	.6	.56	.00	431	.59	253	300	66	1.0	727	--
12-30	3.3	.6	.50	.00	447	.61	221	310	72	1.1	742	--
WTD. AVG.	4.0	.6	.60	.01	469	.64	- -	318	78	1.1	758	--
TIME WTD. AVG.	6.2	.8	1.2	.01	625	.85	- -	386	133	1.5	975	--
TOT. LOAD (TONS)	532	87	81	.76	62000	--	- -	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO-PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT. 16...	4.6	1.1	1.3	.03	596	.81	122	370	93	1.5	990	8.2
JAN. 09...	7.0	1.2	2.2	.03	814	1.11	54.9	510	150	1.7	1260	7.8
APR. 11...	8.7	1.1	1.5	.00	840	1.14	68.0	500	220	1.9	1240	8.2
JUNE 05...	1.8	.4	.25	.01	277	.38	185	210	42	.6	466	8.1

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT. 16...	1530	76	.10
NOV. 14...	1610	64	.02
DEC. 19...	1350	20	.00
JAN. 09...	1530	25	.03
FEB. 07...	1500	36	.02
MAR. 12...	0930	26	.02
APR. 11...	1415	30	.00
MAY 14...	0900	230	.03
JUNE 05...	1420	240	.16
AUG. 14...	1545	595	.03
SEP. 04...	0830	225	.01

06088500 MUDDY CREEK AT VAUGHN, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	883	918	1050	1200	1380	1390	1250	1490	531	516	629	736
2	936	889	1120	1200	1380	1310	1350	1460	585	563	629	681
3	936	889	1130	1120	1190	1530	1300	1400	551	584	622	727
4	909	1010	1130	1190	1060	1540	1230	1330	522	589	630	668
5	934	990	1100	1270	1100	1630	1240	1370	476	562	588	665
6	906	1150	1130	1300	1060	1460	1230	1330	502	533	612	724
7	909	1200	1060	1210	1100	1400	1210	1290	473	544	610	715
8	931	1150	953	1220	1100	1390	1210	1310	470	554	620	710
9	909	1030	1060	1210	1060	1340	1190	1290	486	584	649	710
10	909	1030	1140	1120	1090	1280	1190	1260	478	574	587	713
11	883	1070	1040	1150	1090	1210	1200	711	523	561	610	718
12	878	1070	1020	1270	1130	1260	1170	629	565	542	599	753
13	912	1120	1060	1210	1140	1280	1220	616	585	584	622	738
14	934	1110	1060	1160	1240	1300	1200	583	563	596	622	679
15	934	1110	1100	1130	1290	1340	1150	596	594	564	656	700
16	934	1060	1020	914	1290	1330	1150	657	638	596	663	709
17	934	1040	984	962	1250	1210	1200	605	638	584	726	738
18	883	1120	1100	1100	1280	1200	1180	615	648	607	744	733
19	928	1200	1210	1210	1280	1260	1200	689	719	646	749	731
20	883	1230	1210	1180	1450	1340	1200	594	718	662	761	758
21	906	1180	1060	1260	1530	1350	1190	644	774	677	807	778
22	912	1080	1020	1300	1390	1390	1190	803	745	677	763	744
23	960	1050	1090	1280	1570	1340	1190	663	611	695	746	694
24	936	1050	1170	1210	1760	1290	1220	635	561	696	726	701
25	1000	1080	1140	1120	1590	1140	1150	631	564	690	---	735
26	936	1080	1170	1120	1380	1280	1200	582	588	690	723	752
27	931	1080	1130	1160	1320	1530	1190	538	611	661	728	772
28	909	1070	1130	1210	1380	1470	1190	523	580	676	735	809
29	878	994	1140	1190	---	1400	1380	566	563	635	735	727
30	922	1040	1230	1200	---	1460	1530	503	542	635	735	720
31	912	---	1210	1290	---	1340	---	564	---	622	730	---
MONTH	918	1070	1100	1180	1280	1350	1220	854	579	610	679	725
YEAR	MAX	1760	MIN	470	MEAN	964						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	1.5	0.0	0.0	0.5	0.5	5.0	10.5	14.5	20.5	19.0	14.5
2	9.5	0.0	0.0	0.0	0.0	0.5	4.5	8.5	17.0	18.5	20.0	15.5
3	6.5	0.0	0.0	0.0	0.0	0.5	4.0	17.5	16.0	16.5	18.5	14.0
4	7.0	0.0	0.0	0.0	0.0	0.5	9.0	10.5	18.5	17.5	21.0	15.0
5	7.5	0.0	0.0	0.0	0.5	0.5	12.0	22.0	13.0	19.0	22.0	13.5
6	8.0	0.0	0.0	0.0	0.5	0.5	9.0	12.5	15.0	18.0	18.5	13.5
7	9.5	0.0	0.0	0.0	0.5	0.0	3.5	10.5	13.5	19.5	18.5	15.0
8	5.5	0.0	0.0	0.0	0.5	0.0	11.0	10.5	12.5	20.0	14.5	14.0
9	5.0	0.0	0.0	0.0	0.5	1.5	11.0	11.0	15.0	20.0	14.0	13.5
10	5.0	0.0	0.0	0.0	0.5	2.5	7.0	8.5	17.5	20.0	15.5	12.5
11	5.5	0.5	0.0	0.0	0.5	5.0	11.5	13.0	19.0	17.0	16.5	9.0
12	6.5	0.0	0.0	0.0	0.5	3.0	4.5	9.5	21.0	16.0	17.0	9.0
13	10.5	0.0	0.0	0.0	0.5	6.0	5.5	6.5	22.0	20.0	13.5	9.0
14	12.5	0.0	0.0	0.0	0.5	0.5	13.0	8.0	17.0	22.0	15.0	14.5
15	8.0	0.5	0.0	0.0	0.5	0.5	14.5	8.0	23.0	21.5	17.0	16.0
16	6.5	1.0	0.0	0.5	0.5	5.5	12.5	6.0	23.0	22.0	18.5	15.5
17	6.5	0.5	0.0	0.5	0.5	7.5	9.0	7.0	24.0	22.0	19.5	13.0
18	8.5	0.0	0.0	0.5	0.5	3.5	10.0	9.0	25.5	22.0	20.0	14.0
19	8.5	0.0	0.0	0.5	0.5	3.5	14.0	10.0	24.5	22.5	18.0	14.5
20	8.5	0.0	0.5	0.5	0.5	1.0	13.5	7.5	23.5	22.5	14.0	12.0
21	10.5	0.0	1.0	0.5	0.5	0.5	14.5	5.0	19.5	21.5	17.5	13.5
22	8.0	0.0	0.5	0.0	0.5	1.5	9.0	6.5	22.5	22.0	18.0	14.0
23	9.0	0.0	1.0	0.5	0.5	0.5	10.0	11.5	23.0	22.0	19.5	14.5
24	8.0	0.0	0.0	0.5	0.0	3.5	10.5	14.0	22.5	20.0	18.0	12.0
25	8.0	0.0	0.0	0.5	0.5	1.5	13.5	12.5	22.0	21.0	---	11.5
26	4.5	0.0	0.0	0.5	0.5	8.5	13.0	18.0	19.5	18.5	19.5	12.0
27	4.5	0.0	0.0	0.5	0.5	8.0	4.5	13.0	19.0	20.5	19.5	8.5
28	9.5	0.0	0.0	0.0	0.5	7.5	10.0	13.0	19.5	21.5	19.0	10.0
29	7.5	0.0	0.0	0.5	---	4.0	7.5	12.0	18.0	21.5	18.5	8.5
30	6.5	0.0	0.0	0.0	---	8.5	9.5	10.0	20.0	21.0	17.5	7.0
31	4.0	---	---	0.0	---	8.5	---	10.5	---	21.0	13.5	---
MONTH	7.5	0.0	0.0	0.0	0.5	3.0	9.5	10.5	19.5	20.0	17.5	12.5
YEAR	MAX	25.5	MIN	0.0	MEAN	8.5						

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
JAN. 14...	1220	.0	125	773	261	61	72	100	--	--	--
MAY 13...	1150	7.0	248	5690	3810	44	64	94	98	99	100
JUNE 05...	1340	13.0	254	875	600	34	49	82	94	100	--
AUG. 14...	1750	15.0	594	2630	4220	32	40	72	94	99	100

06088500 MUDDY CREEK AT VAUGHN, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	883	918	1050	1200	1380	1390	1250	1490	531	516	629	736
2	936	889	1120	1200	1380	1310	1350	1460	585	563	629	681
3	936	889	1130	1120	1190	1530	1300	1400	551	584	622	727
4	909	1010	1130	1190	1060	1540	1230	1330	522	589	630	668
5	934	990	1100	1270	1100	1630	1240	1370	476	562	588	665
6	906	1150	1130	1300	1060	1460	1230	1330	502	533	612	724
7	909	1200	1060	1210	1100	1400	1210	1290	473	544	610	715
8	931	1150	953	1220	1190	1390	1210	1310	470	554	620	710
9	909	1030	1060	1210	1060	1340	1190	1290	486	584	649	710
10	909	1030	1140	1120	1090	1280	1190	1260	478	574	587	713
11	883	1070	1040	1150	1090	1210	1200	711	523	561	610	718
12	878	1070	1020	1270	1130	1260	1170	629	566	542	599	753
13	912	1120	1060	1210	1140	1280	1220	616	588	584	622	738
14	934	1110	1060	1160	1240	1300	1200	583	543	596	622	679
15	934	1110	1100	1130	1290	1340	1150	596	594	564	656	700
16	934	1060	1020	914	1290	1330	1150	657	628	596	663	709
17	934	1040	984	962	1250	1210	1200	605	638	584	726	738
18	883	1120	1100	1100	1280	1200	1180	615	648	607	744	733
19	928	1200	1210	1210	1280	1260	1200	689	719	646	749	731
20	883	1230	1210	1180	1450	1340	1200	594	718	662	761	758
21	906	1180	1060	1260	1530	1350	1190	644	774	677	807	778
22	912	1080	1020	1300	1390	1390	1190	803	745	677	763	744
23	960	1050	1090	1280	1570	1340	1190	663	611	695	746	694
24	936	1050	1170	1210	1760	1290	1220	635	561	696	726	701
25	1000	1080	1140	1120	1590	1140	1150	631	564	690	---	735
26	936	1080	1170	1120	1380	1280	1200	582	588	690	723	752
27	931	1080	1130	1160	1320	1530	1190	538	611	661	728	772
28	909	1070	1130	1210	1380	1470	1190	523	580	676	735	809
29	878	994	1140	1190	---	1400	1380	566	563	635	735	727
30	922	1040	1230	1200	---	1460	1530	503	542	635	735	720
31	912	---	1210	1290	---	1340	---	564	---	622	730	---
MONTH	918	1070	1100	1180	1280	1350	1220	854	579	610	679	725
YEAR	MAX	1760	MIN	470	MEAN	964						

TEMPERATURE (DEG. C) OF WATER . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	1.5	0.0	0.0	0.5	0.5	5.0	10.5	14.5	20.5	19.0	14.5
2	9.5	0.0	0.0	0.0	0.0	0.5	4.5	8.5	17.0	18.5	20.0	15.5
3	6.5	0.0	0.0	0.0	0.0	0.5	4.0	17.5	16.0	16.5	18.5	14.0
4	7.0	0.0	0.0	0.0	0.0	0.5	9.0	10.5	18.5	17.5	21.0	15.0
5	7.5	0.0	0.0	0.0	0.5	0.5	12.0	22.0	13.0	19.0	22.0	13.5
6	8.0	0.0	0.0	0.0	0.5	0.5	9.0	12.5	15.0	18.0	18.5	13.5
7	9.5	0.0	0.0	0.0	0.5	0.0	3.5	10.5	13.5	19.5	18.5	15.0
8	5.5	0.0	0.0	0.0	0.5	0.0	11.0	10.5	12.5	20.0	14.5	14.0
9	5.0	0.0	0.0	0.0	0.5	1.5	11.0	11.0	15.0	20.0	14.0	13.5
10	5.0	0.0	0.0	0.0	0.5	2.5	7.0	8.5	17.5	20.0	15.5	12.5
11	5.5	0.5	0.0	0.0	0.5	5.0	11.5	13.0	19.0	17.0	16.5	9.0
12	6.5	0.0	0.0	0.0	0.5	3.0	4.5	9.5	21.0	16.0	17.0	9.0
13	10.5	0.0	0.0	0.0	0.5	6.0	5.5	6.5	22.0	20.0	13.5	9.0
14	12.5	0.0	0.0	0.0	0.5	0.5	13.0	8.0	17.0	22.0	15.0	14.5
15	8.0	0.5	0.0	0.0	0.5	0.5	14.5	8.0	23.0	21.5	17.0	16.0
16	6.5	1.0	0.0	0.5	0.5	5.5	12.5	6.0	23.0	22.0	18.5	15.5
17	6.5	0.5	0.0	0.5	0.5	7.5	9.0	7.0	24.0	22.0	19.5	13.0
18	8.5	0.0	0.0	0.5	0.5	3.5	10.0	9.0	25.5	22.0	20.0	14.0
19	8.5	0.0	0.0	0.5	0.5	3.5	14.0	10.0	24.5	22.5	18.0	14.5
20	8.5	0.0	0.5	0.5	0.5	1.0	13.5	7.5	23.5	22.5	14.0	12.0
21	10.5	0.0	1.0	0.5	0.5	0.5	14.5	5.0	19.5	21.5	17.5	13.5
22	8.0	0.0	0.5	0.0	0.5	1.5	9.0	6.5	22.5	22.0	18.0	14.0
23	9.0	0.0	1.0	0.5	0.5	0.5	10.0	11.5	23.0	22.0	19.5	14.5
24	8.0	0.0	0.0	0.5	0.0	3.5	10.5	14.0	22.5	20.0	18.0	12.0
25	8.0	0.0	0.0	0.5	0.5	1.5	13.5	12.5	22.0	21.0	---	11.5
26	4.5	0.0	0.0	0.5	0.5	8.5	13.0	18.0	19.5	18.5	19.5	12.0
27	4.5	0.0	0.0	0.5	0.5	8.0	4.5	13.0	19.0	20.5	19.5	8.5
28	9.5	0.0	0.0	0.0	0.5	7.5	10.0	13.0	19.5	21.5	19.0	10.0
29	7.5	0.0	0.0	0.5	---	4.0	7.5	12.0	18.0	21.5	18.5	8.5
30	6.5	0.0	0.0	0.0	---	8.5	9.5	10.0	20.0	21.0	17.5	7.0
31	4.0	---	---	0.0	---	8.5	---	10.5	---	21.0	13.5	---
MONTH	7.5	0.0	0.0	0.0	0.5	3.0	9.5	10.5	19.5	20.0	17.5	12.5
YEAR	MAX	25.5	MIN	0.0	MEAN	8.5						

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
JAN. 16...	1220	.0	125	773	261	61	72	100	--	--	--
MAY 13...	1150	7.0	248	5690	3810	44	64	94	98	99	100
JUNE 05...	1340	13.0	254	875	600	34	49	82	94	100	--
AUG. 14...	1750	15.0	594	2630	4220	32	40	72	94	99	100

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	85	100	23	107	120	35	64	132	23
2	86	126	29	95	153	39	58	127	20
3	86	119	28	92	239	59	56	132	20
4	91	130	32	88	141	34	56	131	20
5	88	192	46	80	257	56	56	124	19
6	86	53	12	66	146	26	56	110	17
7	87	40	9.4	56	119	18	64	158	27
8	87	62	15	58	92	14	62	161	27
9	88	68	16	60	86	14	56	208	31
10	91	69	17	63	107	18	60	156	25
11	90	71	17	66	179	32	66	112	20
12	90	59	14	68	270	50	58	113	18
13	91	68	17	70	221	42	50	111	15
14	85	60	14	70	202	38	48	136	18
15	80	53	11	66	197	35	48	164	21
16	76	59	12	64	240	41	50	222	30
17	76	109	22	62	332	56	56	139	21
18	96	185	48	56	155	23	50	110	15
19	92	192	48	52	115	16	32	104	9.0
20	96	187	48	50	150	20	42	138	16
21	94	138	35	48	146	19	48	170	22
22	91	123	30	46	138	17	50	155	21
23	91	125	31	46	166	21	45	135	16
24	90	86	21	46	163	20	42	120	14
25	91	74	18	48	178	23	40	198	21
26	96	124	32	50	141	19	36	84	8.2
27	99	119	32	56	138	21	34	189	17
28	101	99	27	60	131	21	32	103	8.9
29	99	101	27	65	122	21	30	79	6.4
30	98	130	34	70	149	28	28	92	7.0
31	101	120	33	--	--	--	26	98	6.9
TOTAL	2798	--	798.4	1924	--	876	1499	--	560.4

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	24	70	4.5	28	93	7.0	46	216	27
2	22	63	3.7	30	118	9.6	50	231	31
3	21	83	4.7	31	104	8.7	50	474	87
4	20	93	5.0	33	74	6.6	30	186	24
5	19	77	4.0	34	88	8.1	30	321	26
6	20	92	5.0	35	86	8.1	36	662	64
7	21	88	5.0	37	79	7.9	40	240	36
8	22	81	4.8	40	112	12	44	219	37
9	23	102	6.3	42	113	13	43	462	77
10	21	132	7.5	44	121	14	68	1170	283
11	20	136	7.3	47	117	15	41	559	87
12	21	138	7.8	50	121	16	43	316	37
13	23	158	9.8	52	141	20	41	402	45
14	25	134	9.0	56	146	22	25	317	34
15	35	204	19	58	140	22	27	382	42
16	125	631	213	60	138	22	40	475	51
17	100	498	134	61	154	25	46	476	59
18	80	205	44	62	123	21	38	335	34
19	60	202	33	62	127	21	34	299	27
20	54	130	19	55	122	18	25	347	35
21	50	80	11	42	140	16	29	363	28
22	46	97	12	54	193	28	33	689	103
23	42	86	9.8	52	200	28	29	527	66
24	38	99	10	44	183	36	48	878	169
25	36	109	11	61	146	32	51	1380	254
26	34	93	8.5	54	235	43	48	495	64
27	32	105	9.1	50	299	55	43	369	43
28	30	106	8.6	50	179	24	41	286	32
29	29	119	9.3	--	--	--	40	219	24
30	28	127	9.6	--	--	--	37	168	17
31	27	89	6.5	--	--	--	40	175	19
TOTAL	1148	--	651.8	1324	--	559.0	1236	--	1962

06088500 MUDDY CREEK AT VAUGHN, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	35	132	12	23	152	9.4	215	623	362
2	35	118	11	21	110	6.2	173	595	278
3	36	108	10	21	103	5.8	189	595	304
4	32	98	8.5	21	103	5.8	182	595	292
5	30	75	6.1	21	94	5.3	232	746	467
6	29	69	5.4	20	105	5.7	189	476	243
7	28	63	4.8	20	103	5.6	219	640	378
8	27	67	4.9	20	96	5.2	220	529	314
9	27	88	6.4	19	76	3.9	238	533	343
10	27	113	8.2	19	88	4.5	270	1050	765
11	29	124	9.7	90	2700	871	211	554	316
12	28	113	8.5	207	1920	1070	196	607	321
13	28	106	8.0	226	3790	2310	170	480	220
14	27	138	10	225	2730	1660	156	361	152
15	26	125	8.8	125	1220	412	137	303	112
16	25	126	8.5	92	684	170	117	283	89
17	27	131	9.5	147	[illegible]	548	124	287	96
18	27	143	10	124	743	249	121	340	111
19	26	162	11	114	720	222	117	414	131
20	26	157	11	271	2630	1650	118	380	119
21	25	144	9.7	356	4100	3940	276	1940	1480
22	24	122	7.9	375	3330	3370	244	1040	685
23	23	141	8.8	286	2120	1640	256	750	518
24	22	124	7.4	263	1460	1040	299	1150	928
25	21	123	7.0	226	1000	610	334	1260	1140
26	21	127	7.2	224	935	565	300	1030	834
27	26	125	8.8	266	1440	1030	268	758	548
28	37	186	19	252	1160	789	316	960	819
29	35	191	18	224	722	437	332	1100	986
30	28	165	12	260	902	633	394	1310	1390
31	--	--	--	240	754	489	--	--	--
TOTAL	837	--	278.1	4748	--	23762.4	6613	--	14741

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	393	1240	1320	318	656	563	237	467	299
2	304	1080	886	347	634	594	224	371	224
3	260	885	621	362	638	624	223	342	206
4	254	713	489	370	733	732	221	303	181
5	295	975	777	410	896	992	222	289	173
6	339	990	906	399	1120	1210	219	281	166
7	323	1060	924	464	1510	1890	212	339	194
8	318	953	818	573	2530	3910	210	345	196
9	321	833	722	730	3580	7060	206	269	150
10	312	885	746	642	2990	5180	207	260	145
11	384	1220	1260	610	2900	4780	204	277	153
12	384	1050	1090	569	2310	3550	201	256	139
13	320	855	739	622	2800	4700	200	246	133
14	301	840	683	608	2730	4480	212	216	124
15	331	983	879	520	2170	3050	207	209	117
16	288	803	624	421	1610	1830	179	210	101
17	266	664	477	326	1230	1080	172	217	101
18	247	611	407	284	960	736	161	217	94
19	242	480	314	278	1020	766	159	209	90
20	258	473	329	343	1500	1390	159	228	98
21	249	551	370	346	1090	1020	146	260	102
22	277	371	277	318	758	651	182	256	126
23	267	394	284	298	515	414	198	224	120
24	274	413	306	280	436	330	187	189	95
25	301	443	360	267	379	273	180	205	100
26	323	435	379	256	352	243	163	192	84
27	382	593	580	242	437	286	190	244	125
28	332	615	551	233	395	248	194	212	111
29	383	893	923	229	335	207	196	235	124
30	377	900	916	225	313	190	196	183	97
31	355	855	820	224	284	172	--	--	--
TOTAL	9640	--	20777	12114	--	53151	5867	--	4168

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	49748
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	122285.1

06089000 SUN RIVER NEAR VAUGHN, MT.

LOCATION.--Lat 47°31'37", long 111°29'05", in NW¼SE¼SW¼ sec.33, T.21 N., R.2 E., Cascade County, at county bridge 1.8 mi (2.9 km) downstream from gaging station, 4.4 mi (7.1 km) southeast of Vaughn, 5.5 mi (8.8 km) downstream from Muddy Creek, and 7.5 mi (12.1 km) northwest of Great Falls.

DRAINAGE AREA.--1,854 mi² (4,802 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1974.
Water temperatures: October 1968 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 654 mg/l Feb. 19-28; minimum, 180 mg/l June 16-30.
Hardness: Maximum, 410 mg/l Dec. 16-31, Feb. 1-9; minimum, 140 mg/l June 16-30.
Specific conductance: Maximum daily, 1,100 micromhos Apr. 7; minimum daily, 266 micromhos June 22.
Water temperatures: Maximum, 23.5°C July 19, 22, 29; minimum, freezing point on many days during December to February.

Period of record:
Dissolved solids: Maximum, 825 mg/l Apr. 29 to May 18, 1970; minimum, 156 mg/l June 1-13, 1972.
Hardness: Maximum, 460 mg/l Apr. 1-30, 1973; minimum, 130 mg/l June 1-16, 1971, June 1-13, 1972.
Specific conductance: Maximum daily, 1,720 micromhos May 1, 1970; minimum daily, 214 micromhos June 8, 1970.
Water temperatures: Maximum observed, 28.0°C Aug. 11, 27, 1969; minimum, freezing point on many days during winter periods.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Hardness, 430 mg/l Oct. 3. Minimum observed during water year: Dissolved solids, 177 mg/l June 6. The computations of tons per day of dissolved solids refer to flow past the gaging station. Flow regulated by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-15	--	248	--	5.7	10	55	49	57	2.5	271	0	240
16-31	--	206	--	5.4	10	64	53	63	2.6	296	0	250
NOV.												
01-30	--	251	--	7.2	10	71	52	61	2.4	309	0	250
DEC.												
01-15	--	253	--	7.1	10	66	48	56	2.4	292	0	230
16-31	--	184	--	7.1	10	71	57	66	2.4	310	0	270
JAN.												
01-12	--	108	--	8.7	10	68	53	58	2.5	306	0	240
13-21	--	578	--	8.7	10	65	43	56	3.4	247	0	250
22-31	--	296	--	7.9	20	72	46	54	2.6	291	0	240
FEB.												
01-09	--	211	--	7.6	0	78	52	59	2.5	327	0	250
10-18	--	233	--	6.3	20	69	50	63	2.4	284	0	250
19-28	--	190	--	5.6	20	70	53	70	2.7	291	0	300
MAR.												
01-14	--	202	--	5.4	10	60	53	65	2.0	266	0	300
16-31	--	191	--	4.8	10	65	49	60	2.1	262	0	280
APR.												
01-11	--	169	--	4.7	10	61	51	64	2.4	247	0	290
12-22	--	141	--	4.8	10	60	49	66	2.5	247	0	280
JUNE												
01-15	--	2110	--	7.1	10	41	15	8.6	1.2	172	0	45
16-30	--	3990	--	6.3	20	35	13	8.3	1.1	155	0	39
JULY												
01-15	--	681	--	6.1	20	47	29	26	2.1	228	--	98
16-31	--	482	--	6.1	30	51	36	38	2.8	268	--	130
AUG.												
01-14	--	779	--	7.8	10	57	33	33	3.1	268	--	130
15-31	--	674	--	6.3	20	58	38	40	2.7	281	--	180
SEP.												
03-30	--	408	--	5.0	10	56	40	42	1.2	269	--	180
WTD. AVG.	--	--	--	6.5	15	49	28	29	1.8	219	--	120
TIME WTD. AVG.	--	534	--	6.4	13	60	43	50	2.3	268	--	206
TOT. LOAD (TONS)	--	--	--	3320	8	24900	14500	14600	919	111000	--	61100

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
03...	0845	225	9.0	5.4	10	77	57	62	2.5	328	0	260
DEC.												
19...	1050	177	1.0	7.1	20	79	54	68	2.2	313	0	270
APR.												
01...	1730	185	9.0	3.8	40	71	50	62	2.3	271	0	260
JUNE												
06...	1555	2880	13.0	5.6	20	37	13	7.0	1.0	158	0	34

06089000 SUN RIVER NEAR VAUGHN, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
01-15	4.1	.5	.41	.08	549	.75	368	340	120	1.3	859	8.3
16-31	4.7	.5	.50	.00	591	.80	329	380	140	1.4	923	8.3
NOV.												
01-30	4.7	.5	.70	.01	604	.82	409	390	140	1.3	928	8.2
DEC.												
01-15	4.3	.5	.85	.03	562	.76	384	360	120	1.3	892	8.1
16-31	4.9	.5	.93	.03	636	.87	316	410	160	1.4	980	8.2
JAN.												
01-12	4.6	.5	.90	.00	590	.80	172	390	140	1.3	939	8.1
13-21	5.2	.4	.87	.02	557	.76	869	340	140	1.3	872	8.1
22-31	4.8	.4	.77	.01	575	.78	460	370	130	1.2	894	8.2
FEB.												
01-09	5.1	.7	.73	.00	619	.84	353	410	140	1.3	960	8.2
10-18	4.8	.5	.63	.00	589	.80	371	380	150	1.4	903	8.1
19-28	5.2	.9	.66	.00	654	.89	336	390	150	1.5	1000	8.2
MAR.												
01-14	5.0	.4	.40	.01	630	.86	344	380	160	1.4	962	8.0
16-31	4.8	.4	.38	.00	597	.81	308	360	150	1.4	924	8.2
APR.												
01-11	5.5	.4	.13	.00	601	.82	274	360	160	1.5	950	8.2
12-22	5.3	.4	.14	.00	590	.80	225	350	150	1.5	954	8.1
JUNE												
01-15	.9	.2	.00	.00	204	.28	1160	160	23	.3	348	7.8
16-30	.9	.2	.01	.01	180	.24	1940	140	14	.3	306	7.9
JULY												
01-15	2.0	.4	.02	.01	323	.44	594	240	50	.7	548	--
16-31	3.3	.5	.00	.00	400	.54	499	280	56	1.0	664	--
AUG.												
01-14	3.1	.5	.25	.02	401	.55	843	280	58	.9	668	--
15-31	3.2	.5	.18	.01	446	.61	812	300	66	1.0	728	--
SEP.												
03-30	3.2	.4	.25	.00	442	.60	487	300	84	1.0	724	--
WTD. AVG.	2.4	.3	.20	.01	345	.47	--	238	60	.7	562	--
TIME WTD. AVG.	3.9	.5	.42	.01	507	.69	--	329	110	1.1	803	--
TOT. LOAD (TONS)	1230	173	101	4.8	176000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
03...	5.5	.6	.35	.02	634	.86	371	430	160	1.3	948	8.1
DEC.												
19...	4.8	.4	.86	.01	644	.88	308	420	160	1.4	972	8.1
APR.												
01...	4.5	.6	.46	.01	590	.80	295	380	160	1.4	926	8.2
JUNE												
06...	.7	.2	.07	.00	177	.24	1380	150	16	.3	316	8.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.			
03...	0845	225	.01
31...	1245	202	.01
NOV.			
28...	1135	286	.02
DEC.			
19...	1650	177	.01
MAR.			
01...	1200	199	.02
APR.			
01...	1730	185	.01
MAY			
14...	1550	485	.00
JUNE			
06...	1555	2880	.18
AUG.			
13...	1015	1500	.03
SEP.			
03...	1130	502	.01

06089000 SUN RIVER NEAR VAUGHN, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	909	920	926	1000	970	1010	879	---	418	522	661	---
2	816	918	900	1050	1070	927	849	---	597	477	689	---
3	864	1010	926	1010	1030	872	830	---	416	528	672	701
4	912	990	842	978	894	1090	876	---	340	531	---	698
5	886	886	861	921	851	1060	1070	---	333	534	661	701
6	866	948	877	921	863	1010	903	---	329	539	658	696
7	818	869	860	952	872	903	1100	---	368	541	664	724
8	836	869	826	877	894	906	946	---	368	558	634	---
9	805	869	768	905	887	855	900	---	378	560	637	709
10	773	889	872	926	845	927	934	---	378	573	637	697
11	827	869	846	897	845	900	934	---	378	571	---	694
12	775	1040	826	926	840	927	1020	---	302	572	637	752
13	849	978	826	900	894	903	1050	---	302	572	646	698
14	909	1020	877	887	894	936	874	---	281	---	646	698
15	912	940	924	829	909	---	934	---	279	584	703	---
16	856	943	952	829	889	858	928	---	293	602	705	666
17	864	855	984	---	894	858	895	---	279	605	706	709
18	864	889	---	673	892	860	903	---	284	632	---	709
19	909	872	1050	765	939	875	903	---	290	632	703	709
20	909	951	975	797	944	868	898	---	---	664	706	709
21	909	869	957	829	947	792	909	---	288	---	868	682
22	966	821	924	880	1070	842	946	---	266	664	812	---
23	914	876	949	887	976	835	---	---	287	697	752	709
24	914	876	---	880	1070	865	---	---	284	709	733	686
25	937	918	903	784	914	903	876	---	284	730	---	719
26	997	872	895	---	970	1020	---	---	284	730	703	755
27	914	1040	1020	872	---	1030	---	---	284	687	703	748
28	912	891	1010	869	891	990	---	---	461	---	687	730
29	912	891	981	869	---	927	---	---	511	709	703	---
30	914	1040	1010	926	---	927	---	---	436	687	705	755
31	914	---	856	951	---	855	---	---	---	704	708	---
MONTH	883	921	911	889	924	918	---	---	345	611	694	711
YEAR	MAX	1100	MIN	266	MEAN	795						

TEMPERATURE (DEG. C) OF WATER . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	0.0	0.0	3.0	10.5	---	12.5	16.5	19.5	---
2	---	---	---	0.0	0.0	3.0	10.0	---	14.5	18.0	22.0	---
3	9.0	---	---	0.0	0.0	1.0	11.0	---	15.0	17.5	22.0	16.5
4	---	---	---	0.0	0.0	2.5	11.0	---	14.0	16.5	---	17.5
5	---	---	---	0.0	0.0	3.0	11.0	---	13.5	17.0	22.5	17.0
6	---	---	---	0.0	0.0	4.0	10.5	---	12.0	16.0	20.0	17.0
7	---	---	---	0.0	0.0	0.5	11.5	---	13.0	17.5	19.5	17.0
8	---	---	---	0.0	0.0	1.0	11.0	---	13.5	18.0	17.5	---
9	---	---	---	0.0	0.0	4.0	10.5	---	13.0	19.0	18.5	16.5
10	---	---	---	0.0	0.0	3.0	9.0	---	14.0	22.0	18.0	16.0
11	---	---	---	0.0	0.0	5.5	8.0	---	14.5	20.0	---	12.0
12	---	---	---	0.0	0.5	6.0	7.0	---	15.0	18.0	18.5	12.0
13	15.0	---	---	0.0	0.0	4.0	6.0	---	14.5	20.0	16.0	12.5
14	14.0	---	---	0.0	0.0	2.5	12.5	---	15.0	---	14.0	13.0
15	15.0	---	---	0.0	0.5	---	12.0	---	14.5	23.0	15.0	---
16	15.5	---	---	0.0	0.5	6.0	13.0	---	13.0	22.0	17.0	17.0
17	16.0	---	---	0.5	1.0	7.0	11.0	---	14.0	22.5	19.5	15.0
18	15.0	---	---	0.5	1.0	8.5	12.0	---	15.0	23.0	---	17.0
19	16.0	---	---	0.5	1.5	4.0	10.0	---	13.5	23.5	21.0	17.0
20	14.0	---	2.5	0.5	2.0	5.0	11.0	---	---	23.0	17.0	15.0
21	15.5	---	2.5	0.5	2.5	3.0	14.0	---	13.5	---	16.0	14.5
22	15.0	---	2.0	0.5	2.5	4.5	14.5	---	14.5	23.5	18.0	---
23	15.0	---	3.0	0.5	2.5	5.0	---	---	15.0	22.5	20.0	15.5
24	14.0	---	---	0.5	3.0	7.0	---	---	16.0	22.0	20.5	17.0
25	---	---	2.0	0.5	3.5	7.5	15.0	---	16.5	22.0	---	16.0
26	---	---	---	---	4.0	8.0	---	---	15.5	21.0	19.5	14.0
27	16.0	---	---	0.5	---	10.5	---	---	16.0	20.0	19.5	12.0
28	14.0	---	---	0.5	4.0	11.0	---	---	17.5	---	20.0	12.0
29	---	---	0.0	0.0	---	11.5	---	---	18.0	23.5	18.5	---
30	---	---	0.0	0.0	---	11.0	---	---	18.0	22.0	18.0	8.5
31	4.0	---	0.0	0.0	---	11.5	---	---	---	22.0	16.5	---
MONTH	---	---	---	0.0	1.0	5.5	---	---	14.5	20.5	18.5	15.0
YEAR	MAX	23.5	MIN	0.0	MEAN	10.5						

06115200 MISSOURI RIVER NEAR LANDUSKY, MT.

LOCATION.--Lat 47°37'51", long 108°41'13", in NW¼NE¼ sec.31, T.22 N., R.24 E., Fergus County, Fort Peck Game Range, at gaging station on right bank 380 ft (116 m) upstream from bridge on U.S. Highway 191, 0.9 mi (1.4 km) upstream from Armells Creek, 20 mi (32 km) south of Landusky, and at mile 1,921.61 (3,091.87 km).

DRAINAGE AREA.--40,987 mi² (106,156 km²).

PERIOD OF RECORD.--Sediment records: October 1971 to September 1974.

EXTREMES.--1973-74:
Sediment concentrations: Maximum daily, 13,100 mg/l May 22; minimum daily, 17 mg/l Dec. 22.
Sediment discharge: Maximum daily, 785,000 tons (712,000 tonnes) May 21; minimum daily, 372 tons (337 tonnes) Dec. 22.
Period of record:
Sediment concentrations: Maximum daily, 13,100 mg/l May 22, 1974; minimum daily, 5 mg/l on several days during December 1971 and January 1972.
Sediment discharge: Maximum daily, 785,000 tons (712,000 tonnes) May 21, 1974; minimum daily, 82 tons (74 tonnes) Dec. 27, 1971.

REMARKS.--Prior to July 1972, sampling and record computation under supervision of Corps of Engineers, U.S. Army. Flow affected by ice Nov. 7 to Mar. 7. Flow partially regulated by reservoirs.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	4240	38	435	6160	77	1280	7200	70	1360
2	4900	70	926	6180	75	1250	7350	70	1390
3	5080	1310	18000	6280	72	1220	7500	68	1380
4	4980	900	12100	6380	70	1210	7800	63	1330
5	4910	370	4910	6000	70	1130	7800	62	1310
6	5100	200	2750	5500	70	1040	7850	51	1080
7	5360	145	2100	5300	127	1820	7900	42	896
8	5720	170	2630	5250	178	2520	8050	44	956
9	5720	196	3030	5350	198	2860	8200	53	1170
10	6020	236	3840	5600	238	3600	8100	66	1440
11	6020	281	4570	6500	283	4970	7900	68	1450
12	4750	150	1920	7250	322	6300	7850	63	1340
13	5340	56	807	7950	355	7620	7950	55	1180
14	5680	48	736	8200	378	8370	8100	41	897
15	5540	48	718	8400	383	8690	8050	26	565
16	5500	49	728	8100	368	8050	7800	19	400
17	5460	52	767	7750	243	5080	7700	26	541
18	5920	54	863	7000	133	2510	7950	32	687
19	5700	46	708	6400	136	2350	8050	32	696
20	5420	38	556	5950	141	2270	8100	28	612
21	5220	37	521	5650	126	1920	8150	22	484
22	5170	39	544	5500	102	1510	8100	17	372
23	5360	44	637	5400	84	1220	8100	18	394
24	5130	49	679	5600	76	1150	8150	24	528
25	5360	50	724	5850	70	1110	8100	30	656
26	5720	48	741	6150	67	1110	8050	32	696
27	5740	50	775	6400	65	1120	8000	30	648
28	5460	54	796	6600	63	1120	7850	28	593
29	6220	63	1060	6850	64	1180	7750	32	670
30	6020	73	1190	7100	66	1270	7500	38	770
31	5880	77	1220	--	--	--	7300	46	907
TOTAL	168640	--	71981	192600	--	86850	244250	--	27398

06115200 MISSOURI RIVER NEAR LANDUSKY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7050	56	1070	8050	57	1240	8200	437	9680
2	6800	65	1190	7200	43	836	8250	481	10700
3	6400	72	1240	5350	32	462	8200	489	10800
4	5850	73	1150	5450	27	397	8250	490	10900
5	5000	54	729	6050	36	588	8300	487	10900
6	4650	37	465	7400	83	1660	8350	519	11700
7	4900	42	556	8500	109	2500	8300	450	10100
8	5300	45	644	8350	115	2590	8150	404	8890
9	5700	72	1110	8000	113	2440	8050	358	7780
10	6350	81	1390	7600	100	2050	8000	275	5940
11	6900	82	1530	7600	86	1760	6520	257	4520
12	7200	77	1500	7800	84	1770	7660	271	5600
13	7700	73	1520	7850	88	1870	8870	431	10300
14	8100	76	1660	7950	94	2020	7900	672	14300
15	8450	86	1960	7800	87	1830	7230	231	4510
16	8800	128	3040	7550	78	1590	8310	156	3500
17	9200	154	3830	7400	75	1500	8340	197	4440
18	9950	154	4140	7500	80	1620	8360	394	8890
19	11900	147	4720	7550	87	1770	7660	440	9100
20	13600	145	5320	7800	97	2040	7880	346	7360
21	11300	139	4240	7950	99	2130	7880	283	6020
22	8650	112	2620	7950	88	1890	8640	256	5970
23	8550	72	1660	7850	81	1720	9260	302	7550
24	8600	47	1090	7700	79	1640	8120	291	6380
25	8600	61	1420	7500	89	1800	8020	224	4850
26	8800	82	1950	7600	105	2150	8440	175	3990
27	8850	88	2100	7950	139	2990	8640	205	4780
28	8750	89	2100	8100	282	6170	8820	270	6430
29	8700	89	2090	--	--	--	8970	348	8430
30	8650	87	2030	--	--	--	9410	434	11000
31	8500	77	1770	--	--	--	9390	457	11600
TOTAL	247750	--	61834	211350	--	53013	256370	--	246910

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	9310	414	10400	11800	354	11300	23500	1570	99600
2	9990	349	9410	11100	284	8510	22500	2290	139000
3	9140	292	7210	10700	263	7600	21100	1460	83200
4	9220	309	7690	10900	277	8150	19300	785	40900
5	8790	284	6740	10900	320	9420	19200	770	39900
6	8940	261	6300	11100	340	10200	20900	820	46300
7	9040	255	6220	11100	350	10500	21000	1270	72000
8	9220	263	6550	11300	338	10300	21000	1130	64100
9	9190	279	6920	10900	218	6420	19200	610	31600
10	9490	300	7690	11800	192	6120	18300	680	33600
11	9540	313	8060	12200	289	9520	16900	570	26000
12	10100	316	8620	11800	330	10500	16200	590	25800
13	9460	307	7840	12400	1730	57900	16000	710	30700
14	10000	279	7530	14700	3970	158000	16000	889	38400
15	9920	224	6000	13400	2540	91900	17700	1190	56900
16	9690	170	4450	13000	1570	55100	19000	880	45100
17	10200	203	5590	12500	770	26000	20700	640	35800
18	9690	277	7250	11800	240	7650	22500	740	45000
19	9770	296	7810	12100	330	10800	23000	835	51900
20	9140	280	6910	14800	4400	176000	25800	900	62700
21	8640	240	5600	22900	12700	785000	29800	3720	299000
22	9870	276	7360	21100	13100	746000	30700	2210	183000
23	10200	283	7790	19400	7300	382000	30300	900	73600
24	10400	237	6650	18600	3070	154000	30200	1080	88100
25	10600	241	6900	18200	2470	121000	28500	2260	174000
26	10200	293	8070	18500	1980	98900	26100	1760	124000
27	10900	357	10500	19100	1930	99500	27500	750	55700
28	12300	457	15200	22500	2470	150000	26900	770	55900
29	13700	619	22900	23000	1830	114000	26500	620	44400
30	12900	579	20200	23100	1740	109000	24400	490	32300
31	--	--	--	22900	1870	116000	--	--	--
TOTAL	299550	--	256360	469600	--	3467290	680700	--	2198500

06115200 MISSOURI RIVER NEAR LANDUSKY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	23900	480	31000	9120	450	11100	7080	138	2640
2	23200	465	29100	8870	615	14700	7350	112	2220
3	22300	465	28000	8540	850	19600	6960	137	2570
4	20300	500	27400	9020	730	17800	7310	193	3810
5	17300	520	24300	8390	645	14600	7310	308	6080
6	16700	420	18900	8690	670	15700	7380	419	8350
7	16500	2910	130000	9640	765	19900	7380	412	8210
8	15300	3530	146000	10100	6300	172000	7250	369	7220
9	14600	3110	123000	11200	8600	260000	7020	312	5910
10	14600	2580	102000	10700	1930	55800	7700	284	5900
11	14300	1960	75700	10800	945	27600	8490	304	6970
12	12200	1300	42800	11000	1190	35300	8090	342	7470
13	12700	920	31500	10400	1450	40700	7660	343	7090
14	11500	610	18900	11900	4800	154000	7610	321	6600
15	11900	420	13500	11400	3200	98500	8290	304	6800
16	11600	480	15000	11400	1180	35300	8120	300	6580
17	11100	530	15900	11300	930	28400	8360	329	7430
18	10300	490	13600	10700	1470	42500	9540	381	9810
19	9460	470	12000	10500	2110	59800	8190	362	8000
20	9410	480	12200	10700	2640	76300	7720	306	6380
21	9170	520	12900	13100	10700	378000	7900	233	4970
22	9290	560	14000	10800	6610	193000	8770	164	3880
23	9260	570	14300	9590	2560	66300	8240	119	2650
24	9240	550	13700	9140	615	15200	8290	109	2440
25	8990	510	12400	8870	398	9530	7630	152	3130
26	9190	460	11400	8290	282	6310	7740	183	3820
27	9390	390	9890	8040	214	4650	7660	138	2850
28	8970	340	8230	7900	164	3500	6340	165	2820
29	9670	315	8220	7740	127	2650	6100	217	3570
30	8770	320	7580	7310	114	2250	7440	237	4760
31	8870	380	9100	7970	167	3590	--	--	--
TOTAL	399980	--	1032520	303120	--	1485580	230920	--	160930

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	3704830
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	9649166

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
MAR. 12...	1500	5.0	8230	230	5110	35	51	74	91	99	100
APR. 03...	0930	6.5	9430	285	7260	34	44	67	87	100	--
MAY 07...	1715	16.0	10800	349	10200	--	--	73	82	93	100
JUNE 04...	1330	16.0	19000	808	41500	29	40	67	94	99	100
JULY 03...	1200	19.5	22100	447	26700	--	--	63	95	99	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	BED MAT. FALL DIAM. % FINER THAN .004 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM
OCT. 02...	1130	14.0	22	85	99	100	--	--	--	--
APR. 03...	0930	6.5	14	79	99	100	--	--	--	--
MAY 07...	1715	16.0	7	38	71	98	100	--	--	--
JUNE 04...	1330	16.0	--	1	3	23	97	99	100	--
JULY 03...	1200	19.5	--	1	3	21	91	99	99	100
AUG. 06...	1500	19.0	9	51	85	91	99	100	--	--

06172310 MILK RIVER AT TAMPICO, MT.

LOCATION.--Lat 48°18'29", long 106°49'19", in SW¼SW¼SW¼ sec.32, T.30 N., R.38 E., Valley County, at gaging station at county bridge, 0.8 mi (1.3 km) downstream from Buggy Creek, and 0.3 mi (0.5 km) northeast of Tampico.

DRAINAGE AREA.--54,592 mi^2 (141,393 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1973 to September 1974.
Water temperatures: October 1973 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 1,320 mg/l Dec. 17-29; minimum, 165 mg/l Apr. 1-16.
Hardness: Maximum, 520 mg/l Dec. 17-29; minimum, 75 mg/l Apr. 1-16.
Specific conductance: Maximum daily, 1,970 micromhos Jan. 6; minimum daily, 235 micromhos Apr. 11.
Water temperatures: Maximum, 27.0°C July 19, 20, 23; minimum, freezing point on many days during November to March.

REMARKS.--Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Hardness, 530 mg/l Jan. 10. Flow regulated by several reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	50	--	6.9	10	76	36	160	6.3	327	0	390
NOV.												
01-30	--	119	--	7.2	30	71	42	200	1.2	335	0	470
DEC.												
01-16	--	91	--	6.9	10	89	58	230	7.0	397	0	580
17-29	--	89	--	7.7	10	110	59	260	7.4	473	0	600
JAN.												
01-12	--	84	--	9.8	30	80	59	280	7.2	412	0	630
13-20	--	135	--	5.3	30	46	23	110	5.7	224	0	250
21-31	--	2040	--	4.8	150	29	13	56	5.5	125	0	130
FEB.												
01-09	--	538	--	5.3	70	24	9.4	34	7.2	102	0	88
10-19	--	337	--	7.1	70	38	15	73	7.9	163	0	160
20-28	--	434	--	7.3	160	36	15	58	8.3	155	0	140
MAR.												
01-15	--	845	--	7.0	50	32	14	54	6.3	141	0	140
16-31	--	544	--	6.3	50	25	10	43	5.3	111	0	110
APR.												
01-16	--	3710	--	6.1	50	18	7.2	26	4.6	88	0	56
17-30	--	200	--	7.6	80	23	8.7	39	5.6	114	0	83
MAY												
01-08	--	125	--	7.1	30	38	18	81	7.5	186	0	180
09-22	--	941	--	7.1	20	47	22	110	7.9	204	0	260
23-31	--	7560	--	8.3	20	32	12	59	6.0	134	0	140
JUNE												
01-09	--	3600	--	11	20	39	18	61	7.9	174	0	150
10-21	--	848	--	11	50	47	23	72	8.4	228	0	160
22-30	--	1450	--	9.4	40	47	22	95	9.2	211	0	220
JULY												
01-20	--	712	--	7.9	70	43	22	100	8.0	187	--	240
21-31	--	81	--	7.6	50	50	26	140	8.4	241	0	300
AUG.												
01-09	--	15	--	8.1	10	65	31	150	9.1	286	--	340
12-31	--	1000	--	7.9	10	37	16	73	6.1	177	--	170
SEP.												
01-08	--	236	--	6.5	10	52	23	96	3.1	240	--	210
09-30	--	221	--	5.6	10	57	25	110	2.7	253	4	240
WTD. AVG.	--	--	--	7.7	44	34	15	64	6.2	153	0	152
TIME WTD. AVG.	--	853	--	7.3	40	51	26	115	6.1	231	0	269
TOT. LOAD (TONS)	--	--	--	6370	37	28400	12600	53600	5190	127000	53	126000

ANALYSES OF ADDITIONAL SAMPLES

JAN.												
10...	1330	83	.5	10	60	120	57	260	6.6	499	0	610
APR.												
08...	1400	4930	3.0	4.4	160	18	7.4	36	4.2	90	0	76
JULY												
01...	1330	541	25.5	7.6	60	45	21	79	7.5	211	0	180

06172310 MILK RIVER AT TAMPICO, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-31	22	.4	.03	.01	859	1.17	116	340	70	3.8	1250	8.2
NOV.												
01-30	30	.3	.04	.02	987	1.34	317	350	75	4.7	1440	8.2
DEC.												
01-16	44	.8	.05	.00	1210	1.65	297	460	140	4.7	1780	8.1
17-29	46	.3	.23	.00	1320	1.80	317	520	130	5.0	1930	8.1
JAN.												
01-12	50	.4	.07	.01	1330	1.81	302	460	120	5.7	1890	8.1
13-20	19	.3	.36	.01	571	.78	208	210	26	3.3	924	7.9
21-31	9.8	.2	.42	.04	312	.42	1720	130	23	2.2	556	7.6
FEB.												
01-09	6.3	.9	.23	.02	227	.31	330	99	15	1.5	392	7.3
10-19	10	.3	.45	.04	394	.54	359	160	23	2.5	637	7.5
20-28	9.8	.4	.51	.07	353	.48	414	150	22	2.1	593	7.5
MAR.												
01-15	8.4	.2	.05	.03	332	.45	757	140	22	2.0	553	7.5
16-31	6.4	.2	.10	.02	261	.36	383	100	13	1.8	446	7.5
APR.												
01-16	3.0	.2	.03	.01	165	.22	1650	75	2	1.3	296	7.6
17-30	3.6	.2	.00	.03	227	.31	123	93	0	1.8	415	7.7
MAY												
01-08	7.4	.2	.00	.00	431	.59	145	170	16	2.7	708	8.3
09-22	11	.3	.00	.00	566	.77	1440	210	41	3.3	907	7.7
23-31	5.2	.2	.00	.00	329	.45	6720	130	19	2.3	542	7.6
JUNE												
01-09	7.4	.3	.00	.00	380	.52	3690	170	29	2.0	617	8.0
10-21	9.1	.3	.00	.01	443	.60	1010	210	25	2.2	734	8.1
22-30	13	.3	.00	.00	520	.71	2040	210	35	2.9	831	7.7
JULY												
01-20	11	.3	.00	.01	525	.71	1010	200	45	3.1	820	--
21-31	14	.3	.01	.01	665	.90	145	230	34	4.0	1080	--
AUG.												
01-09	18	.4	.01	.01	763	1.04	30.9	290	55	3.8	1180	--
12-31	7.6	.2	.00	.01	405	.55	1090	160	13	2.5	653	--
SEP.												
01-08	12	.2	.00	.00	521	.71	332	220	28	2.8	852	--
09-30	13	.3	.01	.00	582	.79	347	250	31	3.1	919	--
WTD. AVG.	7.9	.3	.06	.01	363	.49	--	149	22	2.2	594	7.7
TIME WTD. AVG.	16	.3	.11	.01	605	.82	--	235	45	3.1	931	7.9
TOT. LOAD (TONS)	6530	208	52	8.6	302000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
JAN.												
10...	45	.4	.49	.04	1360	1.85	305	530	130	4.9	1950	7.7
APR.												
08...	3.5	.2	.12	.01	195	.27	2600	75	2	1.8	337	7.3
JULY												
01...	11	.2	.03	.04	456	.62	666	200	26	2.4	745	8.1

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
JAN.			
10...	1330	83	.04
FEB.			
11...	1330	300	.16
MAR.			
06...	1145	890	.11
APR.			
08...	1400	4930	.04
MAY			
10...	1315	191	.06
JUNE			
07...	1330	2290	.10
JULY			
01...	1330	541	.08
AUG.			
21...	1115	760	.07
SEP.			
06...	1500	183	.04

06172310 MILK RIVER AT TAMPICO, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	1260	1660	1950	374	588	284	565	572	727	1170	744
2	1250	1280	1810	1860	388	651	271	686	572	651	1200	795
3	1210	1220	1630	1860	398	650	253	704	572	654	1200	825
4	1210	1280	1780	1940	362	650	266	671	598	---	1150	815
5	1210	1400	1710	1960	413	650	290	647	---	767	1150	815
6	1240	1450	1710	1970	370	651	301	681	641	803	1110	862
7	1240	1360	1720	1930	363	512	301	723	671	796	1090	886
8	1240	1520	1820	1940	367	464	327	757	700	794	1110	899
9	1240	1330	1840	1880	365	431	317	807	719	918	1110	911
10	1240	1320	1780	1950	627	437	301	845	738	733	---	91[illegible]
11	1250	1280	1780	1880	623	510	235	873	738	796	---	911
12	1250	1340	1720	1880	623	510	251	876	700	830	738	[illegible]
13	1250	1330	1710	911	613	520	276	853	---	835	832	899
14	1250	1330	1740	911	623	463	301	926	700	807	733	916
15	1250	1320	1800	911	623	463	307	935	700	734	648	911
16	1250	1340	1840	906	684	458	346	903	716	790	595	911
17	1260	1390	1940	911	603	364	401	957	719	---	550	911
18	1260	1510	1950	914	612	356	386	957	719	880	546	916
19	1260	1490	1960	911	627	465	376	997	745	910	581	916
20	1300	1500	1960	886	570	414	376	954	712	910	592	916
21	1350	1530	1900	594	581	459	367	814	712	945	631	924
22	1350	1800	1850	674	579	451	389	765	786	945	695	927
23	1350	1750	1940	690	579	494	424	567	880	948	700	904
24	1210	1810	1930	690	---	494	438	579	---	945	911	884
25	1210	1700	1910	695	534	518	486	514	857	1010	811	875
26	1300	1570	1940	682	534	478	477	523	820	1040	653	863
27	1230	1550	1940	309	588	493	502	513	799	1090	677	859
28	1230	1530	1940	281	680	510	537	492	842	1110	700	863
29	1150	1490	1940	269	---	457	556	503	755	1110	---	856
30	1200	1530	---	371	---	395	580	542	763	1140	---	852
31	1250	---	---	286	---	393	---	565	---	1150	770	---
MONTH	1250	1450	1830	1150	524	495	364	732	720	889	834	879
YEAR	MAX	1970	MIN	235	MEAN	930						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.5	7.0	1.5	0.0	0.0	0.0	2.0	15.5	14.0	24.0	25.0	17.0
2	13.0	4.0	1.0	0.0	0.0	0.5	2.5	14.0	16.5	24.0	24.0	16.0
3	13.0	4.0	1.0	0.0	0.0	0.5	2.5	16.0	17.0	23.0	24.0	15.0
4	10.5	1.0	0.0	0.0	0.0	0.5	3.5	18.0	17.0	---	24.0	15.0
5	10.0	1.0	0.0	0.0	0.0	0.5	3.5	16.0	---	22.0	24.0	17.5
6	13.0	0.0	0.0	0.0	0.0	0.0	4.0	16.5	16.0	22.0	25.5	18.5
7	13.0	0.0	0.0	0.0	0.0	0.5	4.5	17.0	17.0	22.0	21.5	18.0
8	10.0	0.5	0.0	0.0	0.0	1.0	4.0	16.5	16.5	22.0	21.0	17.5
9	11.5	2.0	0.5	0.0	---	1.0	5.5	16.5	18.0	23.0	21.5	14.5
10	9.0	1.0	0.5	0.0	---	1.0	6.5	16.0	17.5	24.0	19.5	16.0
11	11.0	1.0	1.0	0.0	1.0	2.0	7.0	16.5	18.5	24.0	---	13.0
12	8.0	1.0	1.0	0.0	1.0	2.0	6.0	14.5	19.0	23.0	17.5	14.0
13	11.0	1.0	0.5	0.0	1.0	2.0	6.0	13.5	---	23.5	21.0	14.5
14	12.0	2.0	0.0	0.0	1.0	0.5	7.5	13.0	21.5	23.5	20.0	13.0
15	10.5	2.0	0.0	0.0	1.0	0.5	7.0	14.0	19.5	25.0	17.0	14.5
16	8.5	2.5	0.0	0.0	1.0	0.5	10.0	14.0	20.5	24.5	17.0	16.0
17	9.0	1.5	0.0	0.0	0.5	1.5	11.0	13.0	21.0	---	19.0	17.5
18	11.0	1.5	0.0	0.0	1.0	1.5	12.0	11.5	21.0	25.0	19.0	15.5
19	9.0	2.0	0.0	0.0	1.0	1.0	13.0	12.0	23.0	27.0	19.0	15.0
20	9.0	3.0	0.0	0.5	1.0	---	13.0	11.5	23.5	27.0	17.0	15.5
21	9.0	1.5	0.0	0.0	1.0	---	12.5	9.0	21.0	26.0	18.0	15.5
22	9.0	1.0	0.0	0.0	---	0.5	13.0	10.0	22.0	26.0	19.0	15.5
23	9.5	0.5	0.0	0.5	---	---	14.0	10.5	26.0	27.0	19.5	16.0
24	9.0	1.0	0.0	0.5	---	---	14.5	11.0	---	26.0	19.0	17.0
25	9.5	1.0	0.0	0.5	---	---	16.5	9.5	23.0	23.0	20.0	17.5
26	8.5	1.5	0.0	0.5	---	---	15.5	10.5	24.0	25.5	20.5	16.5
27	9.0	1.5	0.5	0.5	0.0	2.0	15.0	13.0	24.0	26.5	20.0	15.5
28	9.0	1.0	0.0	0.5	0.0	2.0	13.0	14.0	23.0	25.5	19.0	15.0
29	9.0	1.5	0.5	0.5	---	2.5	14.5	14.5	24.0	25.5	---	14.0
30	9.0	1.5	---	0.5	---	3.0	15.0	14.0	24.0	24.0	---	13.0
31	8.0	---	---	0.5	---	2.0	---	15.0	---	25.0	18.0	---
MONTH	10.0	1.5	0.5	0.0	---	1.0	9.0	14.0	20.5	24.5	20.5	15.5
YEAR	MAX	27.0	MIN	0.0	MEAN	10.0						

06174500 MILK RIVER AT NASHUA, MT.

LOCATION.--Lat 48°07'52", long 106°21'50", in NE¼NE¼ sec.1, T.27 N., R.41 E., Valley County, at gaging station on downstream side of former highway bridge site, 0.6 mi (1.0 km) southwest of Nashua, 2.0 mi (3.2 km) upstream from Porcupine Creek, and at mile 24.0 (38.6 km).

DRAINAGE AREA.--22,332 mi² (57,840 km²).

PERIOD OF RECORD.--Chemical analyses: December 1949 to May 1953 (partial-record), August 1959 to June 1973 (partial record), January to September 1974 (monthly).
Water temperatures: January to September 1974.
Sediment records: January to September 1974.
EXTREMES.--1973-74:
Specific conductance: Maximum daily, 2,030 micromhos on several days in January; minimum, 246 micromhos Apr. 14.
Water temperatures: Maximum, 27.0°C July 20, 21; minimum, freezing point on many days during January and February.

REMARKS.--Flow regulated by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, JANUARY TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
JAN.										
29...	1400	2600	4.1	22	8.7	39	5.4	95	0	85
FEB.										
26...	1400	620	8.0	33	13	64	7.3	144	0	150
MAR.										
26...	1300	220	6.3	28	13	53	6.3	118	0	130
APR.										
25...	1530	324	7.1	25	10	48	5.5	112	--	110
MAY										
28...	1430	8070	6.4	28	11	62	4.6	113	--	160
JUNE										
28...	1300	3660	10	46	19	110	7.0	150	--	300
AUG.										
02...	1330	133	8.0	62	27	150	8.8	261	--	350
29...	1100	524	7.8	39	17	120	7.1	131	--	300
SEP.										
26...	1430	336	5.6	58	32	120	6.3	277	--	280

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	TURBIDITY (JTU)	CARBON DIOXIDE (CO2) (MG/L)
JAN.										
29...	9.1	.3	248	.34	1810	94	13	1.8	200	9.6
FEB.										
26...	10	.3	387	.53	313	140	18	2.4	100	15
MAR.										
26...	8.2	.3	335	.46	181	120	27	2.1	100	12
APR.										
25...	4.7	.2	270	.37	236	100	12	2.1	100	9.0
MAY										
28...	5.0	.3	345	.47	7520	120	23	2.5	600	11
JUNE										
28...	10	.5	598	.81	5910	190	70	3.4	700	12
AUG.										
02...	27	.4	787	1.07	283	270	52	4.0	40	8.3
29...	7.0	.4	572	.78	809	170	60	4.0	300	8.3
SEP.										
26...	18	.3	671	.91	609	260	49	3.1	10	5.6

06174500 MILK RIVER AT NASHUA, MT.--Continued

CHEMICAL ANALYSES, JANUARY TO SEPTEMBER 1974

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
JAN. 29...	1400	0	0	0	1	12	80	0	90	.2	10	30
APR. 25...	1530	2	0	0	1	9	60	0	0	.1	3	40
AUG. 02...	1330	6	4	0	0	10	70	6	0	.5	1	30

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN. 29...	1400	5	10	0	<50	30	6000	<100	180	.7	10	90
APR. 25...	1530	6	<10	0	<50	20	12000	<100	280	.2	3	200
AUG. 02...	1330	8	<10	0	<50	20	2600	<100	100	.2	0	110

DATE	TIME	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL PHYTO-PLANK-TON (CELLS PER ML)
JAN. 29...	1400	.32	1.3	1.0	.25	7.9	--
FEB. 26...	1400	.36	1.8	1.4	.27	--	--
MAR. 26...	1300	.22	1.5	1.3	.27	--	--
APR. 25...	1530	.12	1.3	1.2	.34	8.7	--
MAY 28...	1430	.31	2.6	2.3	.75	--	--
JUNE 26...	1300	.20	2.9	2.7	.91	--	--
AUG. 02...	1330	.03	.91	.88	.21	7.3	2100
29...	1100	.23	.39	.16	.58	--	3800
SEP. 26...	1430	.01	1.1	1.1	.07	--	5900

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)
JAN. 29...	1400	.0	-5.0	386	10.0	75	7.2	71	600	185	540
FEB. 26...	1400	.5	5.0	590	7.0	52	7.2	116	600	380	150
MAR. 26...	1300	.5	-7.0	495	7.4	56	7.2	97	--	280	100
APR. 25...	1530	14.5	31.0	530	8.2	87	7.3	92	--	20	40
MAY 28...	1430	12.0	11.5	575	7.2	72	7.2	93	--	190	140
JUNE 26...	1300	24.0	28.0	850	6.2	80	7.3	123	--	170	53
AUG. 02...	1330	22.0	25.0	1190	7.6	93	7.7	214	--	80	55
29...	1100	19.0	19.0	950	8.0	92	7.4	107	--	170	230
SEP. 26...	1430	14.5	19.0	1090	9.4	99	7.9	227	--	40	76

06174500 MILK RIVER AT NASHUA, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), JANUARY TO SEPTEMBER 1974
(ONCE-DAILY MEASUREMENT)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	1990	311	535	478	544	527	814	1140	795
2	---	---	---	1990	307	564	391	570	559	885	1180	795
3	---	---	---	1990	320	575	319	572	580	796	1180	795
4	---	---	---	1880	345	589	315	584	580	792	1180	816
5	---	---	---	1980	353	574	300	617	580	756	1160	863
6	---	---	---	2000	384	595	284	656	609	749	1160	844
7	---	---	---	2030	391	592	287	665	634	717	1160	891
8	---	---	---	2030	404	692	298	719	664	732	1140	918
9	---	---	---	2000	404	604	310	786	680	816	1140	918
10	---	---	---	2030	410	539	344	771	703	796	1140	924
11	---	---	---	2030	422	462	313	798	730	860	1130	962
12	---	---	---	2030	441	462	265	798	738	971	1090	962
13	---	---	---	2030	453	430	257	817	738	883	945	990
14	---	---	---	2000	475	454	246	817	769	836	930	971
15	---	---	---	1940	497	486	263	847	717	860	770	968
16	---	---	---	1990	539	450	285	883	699	865	802	962
17	---	---	---	1990	539	398	310	966	717	782	728	962
18	---	---	---	2000	526	431	313	939	734	782	653	977
19	---	---	---	1880	515	398	351	963	740	811	575	977
20	---	---	---	973	540	373	389	936	756	816	575	1010
21	---	---	---	1040	523	429	435	936	744	862	616	1000
22	---	---	---	1330	518	504	447	861	512	909	730	1000
23	---	---	---	719	460	469	435	745	584	940	963	977
24	---	---	---	713	487	469	435	773	666	968	844	1000
25	---	---	---	593	520	450	433	601	750	987	858	993
26	---	---	---	553	559	484	452	583	816	1010	853	993
27	---	---	---	582	569	510	459	542	821	1040	843	1000
28	---	---	---	326	529	510	480	533	843	1040	922	1000
29	---	---	---	352	---	528	529	543	758	1080	855	971
30	---	---	---	340	---	528	503	507	773	1110	855	956
31	---	---	---	324	---	499	---	502	---	1110	777	---
MONTH	---	---	---	1470	455	502	364	722	691	883	932	940
YEAR	MAX	2030	MIN	246	MEAN	778						

TEMPERATURE (C) OF WATER, JANUARY TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	0.0	0.0	1.0	1.5	13.0	15.0	24.0	22.5	16.5
2	---	---	---	0.0	0.0	1.0	1.5	13.5	15.5	23.5	22.0	16.5
3	---	---	---	0.0	0.0	1.0	1.0	13.0	16.5	23.0	22.0	15.5
4	---	---	---	0.0	0.0	1.0	1.0	14.0	17.0	23.5	22.0	16.0
5	---	---	---	0.0	0.0	1.0	1.5	14.0	13.5	23.5	23.0	16.0
6	---	---	---	0.0	0.0	0.5	1.5	15.0	17.5	24.0	23.0	16.5
7	---	---	---	0.0	0.0	0.5	2.0	14.5	13.5	23.5	24.0	17.0
8	---	---	---	0.0	1.0	0.5	3.5	15.0	13.5	24.0	24.0	17.0
9	---	---	---	0.0	1.0	0.5	4.0	15.0	18.0	24.0	22.0	15.5
10	---	---	---	0.0	1.5	1.0	4.0	14.5	17.5	23.5	21.0	16.0
11	---	---	---	0.0	1.0	1.0	5.0	14.5	17.5	24.5	21.0	14.5
12	---	---	---	0.0	1.0	1.0	6.0	13.5	18.5	24.0	20.5	13.5
13	---	---	---	0.0	0.0	1.0	6.0	12.0	19.5	23.5	21.0	12.5
14	---	---	---	0.0	0.0	0.5	6.0	11.5	20.0	23.5	20.5	14.0
15	---	---	---	0.0	1.0	0.5	6.5	13.5	19.5	23.5	19.0	14.0
16	---	---	---	0.0	1.0	0.5	7.5	12.0	20.0	24.5	19.0	15.0
17	---	---	---	1.5	1.0	1.0	9.0	12.0	20.0	25.0	19.5	15.5
18	---	---	---	2.5	1.0	1.0	9.0	11.5	21.5	25.0	19.5	16.5
19	---	---	---	2.0	1.0	0.5	10.0	11.5	23.5	26.5	19.5	15.0
20	---	---	---	3.0	1.0	0.5	12.0	13.0	24.5	27.0	19.5	14.5
21	---	---	---	3.0	1.0	0.5	11.5	10.5	23.5	27.0	19.5	14.5
22	---	---	---	1.0	1.0	0.5	11.5	9.0	23.5	26.5	18.0	15.5
23	---	---	---	1.5	0.0	0.0	11.5	8.0	18.5	26.0	18.0	15.0
24	---	---	---	1.0	0.5	0.5	12.5	8.0	21.0	25.5	19.0	14.5
25	---	---	---	2.5	1.0	0.5	13.5	9.0	23.5	25.5	20.5	15.0
26	---	---	---	1.5	1.0	0.5	15.5	10.0	24.0	24.5	20.0	15.0
27	---	---	---	1.0	0.5	1.0	15.0	12.0	24.0	24.0	20.0	14.5
28	---	---	---	1.0	0.5	1.0	13.5	13.0	24.0	24.0	18.0	14.0
29	---	---	---	0.0	---	1.0	12.5	14.0	23.5	24.0	18.0	14.0
30	---	---	---	0.0	---	1.0	11.5	14.5	23.5	23.5	16.5	13.5
31	---	---	---	0.0	---	1.0	---	14.5	---	23.5	15.0	---
MONTH	---	---	---	0.5	0.5	0.5	7.5	12.5	19.5	24.5	20.0	15.0
YEAR	MAX	27.0	MIN	0.0	MEAN	11.5						

06174500 MILK RIVER AT NASHUA, MT.--Continued

SUSPENDED-SEDIMENT FOR SELECTED DAYS, JANUARY TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM
MAR.						
27...	1400	1.5	212	143	82	100
APR.						
25...	1530	15.0	324	239	271	100
MAY						
28...	1500	12.0	8080	1480	32300	97
JUNE						
26...	1530	24.0	3400	2630	24100	100
AUG.						
02...	1400	22.0	137	69	26	97
29...	1500	9.0	468	742	938	100
SEP.						
26...	1430	14.5	336	30	27	91

PHYTOPLANKTON ANALYSES, AUGUST TO SEPTEMBER 1974

DATE	TOTAL COUNT CELLS/ML	CODOMINANTS (S)	%COMPOSITION
AUG.			
02...	2,100	*Cyclotella (sp)*	22
		Anabaena (sp)	16
		Crucigenia (sp)	16
		Pandorina (sp)	16
AUG.			
29...	3,800	*Cyclotella (sp)*	44
		Melosira (sp)	15
SEPT.			
26...	5,900	*Oscillatoria (sp)*	60

LITTLE PORCUPINE CREEK BASIN

06175400 FRAZER RESERVOIR OUTLET AT FRAZER, MT.

LOCATION.--Lat 48°03'18", long 106°00'28", in SE¼NW¼ sec.35, T.27 N., R.44 E., Valley County, at outlet of Frazer Reservoir, 1 mi (1.6 km) southeast of Frazer.

PERIOD OF RECORD.--Chemical analyses: October and November 1961, April 1962 to June 1974 (discontinued).

REMARKS.--No outflow from reservoir observed during water year. No samples obtained.

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.
(Irrigation network station)

LOCATION.--Lat 48°07'24", long 104°28'30", in SE¼NW¼ sec.3, T.27 N., R.56 E., Richland County, at gaging station at bridge on State Highway 16, 3 mi (5 km) southeast of Culbertson, 9.6 mi (15.4 km) downstream from Big Muddy Creek, and at mile 1,620.76 (2,607.80 km).

DRAINAGE AREA.--91,557 mi² (237,133 km²).

PERIOD OF RECORD.--Chemical analyses: July 1965 to December 1969 (daily), January 1970 to September 1974 (monthly).
Water temperatures: July 1965 to September 1974.
Sediment records: October 1971 to September 1974.

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 738 micromhos Nov. 8; minimum daily, 447 micromhos Apr. 14.
Water temperatures: Maximum, 22.0°C July 20, 21; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 2,940 mg/l Aug. 15; minimum daily, 50 mg/l Oct. 29.
Sediment discharge: Maximum daily, 115,000 tons (104,000 tonnes) May 27; minimum daily, 512 tons (464 tonnes) Oct. 29.

Period of record:
Specific conductance: Maximum daily, 807 micromhos May 10, 1970; minimum daily, 338 micromhos Mar. 30, 1967.
Water temperatures: Maximum observed, 24.5°C July 17, 1966; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 2,940 mg/l Aug. 15, 1974; minimum daily, 45 mg/l Mar. 4, 1973.
Sediment discharge: Maximum daily, 128,000 tons (116,000 tonnes) Mar. 21, 23, 1972; minimum daily, 512 tons (464 tonnes) Oct. 29, 1973.

REMARKS.--Prior to July 1972, sediment sampling and record computation under supervision of Corps of Engineers, U.S. Army. Flow affected by ice during most of winter months.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT. 18...	1330	3790	15	20	0	53	21	51	3.9	210	0	160
NOV. 20...	1215	3100	7.9	10	0	58	22	55	4.0	211	4	160
DEC. 17...	1400	7000	8.5	10	40	58	22	47	4.0	207	0	160
JAN. 29...	1600	8700	7.2	20	0	51	19	52	4.1	178	0	150
FEB. 20...	1100	10700	7.9	20	8	52	19	43	4.0	183	0	140
MAR. 06...	1100	11900	8.0	30	10	51	20	48	4.2	186	0	160
APR. 01...	1530	15500	7.1	40	0	47	19	44	3.9	177	0	130
19...	0930	7230	7.4	50	0	36	15	47	4.7	157	0	120
MAY 17...	1045	4170	6.2	50	0	53	20	66	3.9	216	0	160
JUNE 24...	1600	11900	8.1	20	0	48	19	56	4.6	191	0	150
JULY 31...	1500	10000	8.5	20	0	50	19	43	4.3	191	0	140
AUG. 28...	1100	13900	8.5	60	0	52	20	53	4.5	180	0	160
SEP. 25...	1200	12800	8.6	150	10	54	20	41	3.9	193	--	140

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CARBON DIOXIDE (CO2) (MG/L)
OCT. 18...	9.1	1.0	.12	.01	418	.54	3750	220	47	1.5	4.2
NOV. 20...	10	.6	.02	.03	426	.58	3240	240	58	1.6	1.4
DEC. 17...	9.3	.7	.03	.01	412	.55	7140	240	66	1.3	2.6
JAN. 29...	8.9	.6	.03	.00	381	.53	9480	210	60	1.6	4.5
FEB. 20...	8.4	.6	.08	.02	366	.50	8840	210	58	1.3	2.3
MAR. 06...	8.8	.7	.04	.02	393	.53	12700	210	57	1.4	2.4
APR. 01...	6.9	.7	.05	.01	346	.47	14500	200	50	1.4	2.8
19...	6.0	.5	.09	.02	315	.43	6140	150	23	1.7	3.2
MAY 17...	9.3	.6	.03	.11	425	.58	4790	210	38	2.0	2.7
JUNE 24...	7.8	.7	.05	.00	389	.53	12500	200	41	1.7	1.9
JULY 31...	8.5	.7	.00	.05	368	.50	9440	200	46	1.3	2.4
AUG. 28...	8.5	.7	.01	.00	396	.54	14900	210	65	1.6	3.6
SEP. 25...	9.2	.8	.03	.01	373	.51	12900	220	59	1.2	--

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)
OCT. 18...	1330	9.0	14.5	631	10.2	94	7.9	169	75	0
NOV. 20...	1215	.5	--	678	--	--	8.4	180	--	--
DEC. 17...	1400	.0	-5.0	621	10.4	77	8.1	163	28	35
JAN. 29...	1600	.5	--	616	--	--	7.8	146	--	--
FEB. 20...	1100	1.0	--	595	--	--	8.1	150	--	--
MAR. 06...	1100	.0	--	596	--	--	8.1	153	--	--
APR. 01...	1530	1.0	--	565	--	--	8.0	145	--	--
19...	0930	10.0	--	499	--	--	7.9	129	--	--
MAY 17...	1045	9.5	--	690	--	--	8.1	177	--	--
JUNE 24...	1600	20.5	--	629	--	--	8.2	157	--	--
JULY 31...	1500	20.0	30.0	610	--	--	8.1	157	--	--
AUG. 28...	1100	15.5	18.0	637	--	--	7.9	148	--	--
SEP. 25...	1200	14.5	--	602	--	--	--	158	--	--

DATE	TIME	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT. 18...	1330	397	.38	.25	.13	.04	.06	2.2
NOV. 20...	1215	428	--	--	--	--	--	--
DEC. 17...	1400	407	2.6	.36	2.2	.19	.07	1.0
JAN. 29...	1600	390	--	--	--	--	--	--

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	600	646	667	604	590	574	547	670	602	651	588	598
2	608	660	631	605	563	574	553	670	597	648	583	598
3	610	660	613	632	572	585	534	670	589	634	583	592
4	610	660	593	628	583	585	450	667	591	623	586	592
5	610	689	593	623	571	574	464	657	601	622	583	597
6	611	703	602	623	571	575	465	657	616	622	584	589
7	611	703	609	614	574	581	458	654	628	606	583	589
8	611	738	609	614	566	577	458	654	621	598	583	592
9	611	719	601	605	574	577	447	655	621	598	582	589
10	611	723	587	606	574	591	453	655	630	589	582	598
11	636	723	587	615	574	591	460	655	630	594	584	587
12	636	705	604	605	576	580	472	642	638	631	583	592
13	635	700	595	595	576	574	466	630	638	598	594	598
14	635	643	588	605	575	573	447	630	638	639	587	596
15	628	616	631	605	568	570	460	643	638	639	587	596
16	635	608	620	610	575	570	452	657	638	635	626	589
17	636	620	609	615	596	583	452	671	630	631	639	596
18	636	634	619	---	599	574	468	671	630	611	608	596
19	636	644	609	610	585	570	488	642	644	624	608	592
20	636	660	597	593	575	560	549	616	630	613	620	592
21	632	660	587	595	575	560	613	617	616	613	597	596
22	632	672	587	610	575	560	626	631	616	611	585	596
23	632	683	587	610	585	570	626	640	602	598	586	587
24	633	687	585	637	590	581	626	658	630	600	587	589
25	633	672	588	627	583	586	705	699	603	595	585	592
26	629	672	580	640	583	589	705	705	601	593	597	598
27	622	672	575	667	583	589	693	705	628	594	631	596
28	622	661	583	682	575	577	678	672	643	594	620	598
29	622	646	587	617	---	566	673	637	649	596	618	598
30	623	658	609	583	---	565	676	618	661	606	618	598
31	622	---	609	603	---	557	---	609	---	604	612	---
MONTH	624	671	601	616	578	575	539	653	623	613	597	594
YEAR	MAX	738	MIN	447	MEAN	607						

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.--Continued

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	5.0	0.0	0.0	0.0	0.0	0.5	11.0	13.0	18.0	17.5	12.0
2	13.5	3.0	0.0	0.0	0.0	0.0	1.0	10.5	13.5	18.5	16.0	11.5
3	11.5	1.0	0.0	0.0	0.0	0.0	1.0	10.0	14.5	17.5	16.0	11.0
4	10.5	0.0	0.0	0.0	0.0	0.0	1.0	10.5	15.5	18.0	15.5	12.0
5	9.5	0.0	0.0	0.0	0.0	0.0	2.0	11.5	14.5	18.5	16.0	13.5
6	10.0	0.0	0.0	0.0	0.0	0.0	2.5	11.5	14.0	19.0	16.5	13.5
7	10.0	0.0	0.0	0.0	0.0	0.0	2.0	12.5	14.0	19.0	17.5	14.0
8	10.5	0.0	0.0	0.0	0.0	0.0	2.5	12.5	15.0	19.0	17.5	13.0
9	9.5	0.0	0.0	0.0	0.0	0.0	3.5	11.0	15.0	19.5	16.0	11.5
10	8.0	0.0	0.0	0.0	0.0	0.0	5.0	13.0	14.5	20.5	15.0	14.0
11	8.0	0.0	0.0	0.0	0.0	0.0	5.0	13.0	13.0	21.5	15.0	10.5
12	7.5	0.0	0.0	0.0	0.0	0.0	5.5	11.0	15.0	20.0	15.0	9.5
13	7.5	0.5	0.0	0.0	0.0	0.0	5.0	9.5	16.0	19.0	15.5	9.0
14	9.0	0.0	0.0	0.0	0.0	0.0	5.0	6.5	16.5	19.0	16.5	10.0
15	8.5	0.0	0.0	0.0	0.0	0.0	5.0	8.0	14.0	18.0	15.0	11.0
16	7.0	0.0	0.0	0.0	0.0	0.0	6.0	8.5	15.5	20.0	14.0	13.0
17	8.0	0.0	0.0	0.0	0.0	0.0	7.5	8.5	15.5	20.0	15.0	14.5
18	7.5	0.0	0.0	0.0	0.0	0.0	8.0	8.0	17.0	20.5	15.5	15.0
19	8.0	0.0	0.0	0.0	0.0	0.0	9.5	9.0	17.0	20.5	16.5	13.5
20	9.0	0.0	0.0	0.0	0.0	0.0	9.5	8.0	18.5	22.0	16.0	13.0
21	9.5	0.0	0.0	0.0	0.0	0.0	9.5	7.0	17.0	22.0	14.5	11.5
22	9.5	0.4	0.0	0.0	0.0	0.0	9.0	7.0	17.0	20.0	14.0	10.5
23	10.0	0.0	0.0	0.0	0.0	0.0	9.0	7.0	17.5	19.5	14.5	11.0
24	10.0	0.0	0.0	0.0	0.0	0.0	9.5	7.5	17.5	20.0	16.0	12.0
25	9.5	0.0	0.0	0.0	0.0	0.0	11.5	10.5	18.5	20.0	16.5	12.5
26	7.0	0.0	0.0	0.0	0.0	0.0	13.5	11.5	19.0	19.0	16.0	13.5
27	6.5	0.0	0.0	0.0	0.0	0.0	13.5	13.0	19.0	18.0	15.0	12.0
28	6.0	0.0	0.0	0.0	0.0	0.0	10.5	14.5	19.5	18.0	14.5	11.5
29	7.5	0.0	0.0	0.0	---	0.0	9.0	11.5	18.5	18.0	13.5	10.5
30	6.5	0.0	0.0	0.0	---	0.5	9.5	12.0	17.5	17.5	13.5	8.5
31	5.5	---	0.0	0.0	---	0.5	---	11.5	---	18.0	12.5	---
MONTH	9.0	0.5	0.0	0.0	0.0	0.0	6.5	10.0	16.0	19.5	15.5	12.0
YEAR	MAX	22.0	MIN	0.0	MEAN	7.5						

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	5690	117	1800	3890	110	1160	7000	117	2210
2	5390	118	1720	3880	136	1420	7500	155	3140
3	5350	122	1760	3820	136	1400	7100	158	3030
4	5120	125	1730	3780	126	1290	6700	148	2680
5	4910	125	1660	3610	--	--	6300	127	2160
6	4780	122	1570	3350	117	1060	6400	102	1760
7	4760	121	1560	3200	113	976	6600	97	1730
8	4620	119	1480	3000	110	891	7200	110	2140
9	4150	118	1320	3100	107	896	7800	123	2590
10	3950	123	1310	3100	103	862	8500	136	3120
11	3890	126	1320	3200	99	855	9200	148	3680
12	3850	131	1360	3400	95	872	9500	160	4100
13	3890	131	1380	3900	90	948	9700	162	4240
14	3760	123	1250	4100	87	963	8800	142	3370
15	3580	113	1090	3900	85	895	7900	99	2110
16	3850	103	1070	3650	84	828	7300	72	1420
17	3760	93	944	3500	83	784	7000	73	1380
18	3780	88	898	3300	82	731	6800	83	1520
19	3810	84	864	3200	81	700	6700	100	1810
20	3820	80	825	3100	80	670	6600	117	2080
21	3750	76	770	3300	79	704	6700	125	2260
22	3760	73	741	3500	78	737	7100	133	2550
23	3870	70	731	3700	77	769	7500	141	2860
24	3810	66	679	3700	76	759	8200	149	3300
25	3780	63	643	3800	76	780	8600	155	3600
26	3730	60	604	3850	75	780	8500	151	3470
27	3730	57	574	3900	75	790	8400	132	2990
28	3790	53	542	4000	75	810	8100	107	2340
29	3790	50	512	4100	75	830	8000	93	2010
30	3910	58	612	4300	78	906	7900	81	1730
31	3870	80	836	--	--	--	7700	71	1480
TOTAL	128500	--	34155	108130	--	26066	237300	--	78860

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7600	61	1250	8600	220	5110	12000	208	6740
2	7450	61	1230	8800	127	3020	12000	162	5250
3	7400	74	1480	9000	112	2720	12000	132	4280
4	7400	123	2460	9300	227	5700	12000	142	4600
5	7400	175	3500	9700	269	7050	12000	163	5280
6	7400	208	4160	9800	255	6750	11900	161	5170
7	7400	221	4420	10200	294	8100	12000	161	5220
8	7400	218	4360	10400	295	8280	12000	148	4800
9	7400	215	4300	10600	308	8810	12000	108	3500
10	7400	230	4600	10800	350	10200	12000	85	2750
11	7500	249	5040	11000	356	10600	12000	134	4340
12	7900	267	5700	11000	311	9240	12000	181	5860
13	8400	287	6510	11000	246	7310	12000	169	5480
14	9000	298	7240	11000	247	7340	12000	173	5610
15	9400	307	7790	11000	177	5260	12000	187	6060
16	9700	325	8510	11000	144	4280	12000	155	5020
17	9900	335	8950	11000	172	5110	12000	107	3470
18	10000	316	8530	10900	191	5330	11500	159	4940
19	9900	271	7240	10800	146	4260	11000	250	7430
20	9700	230	6020	10700	159	4590	10600	239	6840
21	9500	216	5540	10800	179	5220	10300	186	5120
22	9400	208	5280	11000	190	5640	9800	142	3760
23	9600	209	5420	11500	190	5900	8400	119	2700
24	10000	221	5970	12000	192	6220	8000	120	2590
25	9700	249	6520	12000	192	6220	9000	131	3180
26	9400	269	6830	12000	193	6250	9800	162	4290
27	9000	275	6680	12000	195	6320	10200	182	5010
28	9000	274	6660	12000	198	6420	10900	160	4710
29	8700	258	6060	--	--	--	11200	163	4930
30	8400	240	5440	--	--	--	12000	179	5800
31	8400	263	5960	--	--	--	12500	197	6650
TOTAL	266750	--	169650	299900	--	177250	349100	--	151380

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	15500	197	8240	4490	92	1120	14900	895	36000
2	19000	197	10100	4400	[illegible]	1060	14900	835	33600
3	20000	202	10900	4300	93	1080	14500	840	32900
4	19000	205	10500	4210	96	1090	14300	850	32800
5	17900	210	10100	4120	100	1110	13200	755	26900
6	17700	239	11400	4150	104	1170	12100	585	19100
7	17300	439	20500	4090	129	1420	11800	508	16200
8	16700	1060	47800	4090	152	1680	11500	495	15400
9	16400	962	42600	4090	175	1930	11500	490	15200
10	15700	792	33600	3980	205	2200	10400	490	13800
11	15200	748	30700	3890	244	2560	10100	478	13000
12	15200	642	26300	4090	293	3240	9550	330	8510
13	14800	610	24400	4220	358	4080	11300	525	16000
14	12200	532	17500	4160	431	4840	11600	490	15300
15	10700	445	12900	4240	470	5380	11100	191	5720
16	9600	441	11400	4430	465	5560	10600	152	4350
17	8850	345	8240	4190	422	4770	10500	155	4390
18	8070	208	4530	4940	418	5580	10000	154	4160
19	7260	131	2570	7280	640	12600	9750	158	4160
20	7000	88	1660	8240	780	17400	9990	159	4290
21	6300	83	1410	9770	845	20000	10000	147	3970
22	5760	93	1450	9400	860	21800	10000	118	3190
23	5450	94	1380	9880	895	23900	11300	151	4610
24	5260	91	1290	10000	1020	27500	11700	688	21700
25	5570	104	1560	12400	1630	54600	15500	979	41000
26	5370	97	1410	15200	2640	108000	16000	918	39700
27	5130	99	1370	16500	2580	115000	13800	639	23800
28	4870	99	1300	16800	1780	80700	12900	561	19500
29	4650	98	1230	16800	1120	50900	13000	615	21600
30	4490	96	1160	17000	905	41500	12700	607	20800
31	--	--	--	15400	910	37800	--	--	--
TOTAL	336930	--	359500	239740	--	661470	360490	--	521650

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	12100	578	18900	10900	230	6770	13500	342	12500
2	11500	540	16800	10500	218	6180	13500	362	13200
3	11100	501	15000	11400	240	7390	12900	355	12400
4	10700	465	13400	11700	247	7800	12500	308	10400
5	10300	430	12000	11600	231	7230	13100	281	9940
6	10200	390	10700	11700	240	7580	13100	259	9160
7	10200	375	10300	11700	267	8430	13100	254	8980
8	10200	373	10300	11800	301	9590	13100	260	9200
9	10000	387	10400	12200	345	11400	12900	271	9440
10	10200	413	11400	12300	386	12800	12800	293	10100
11	10900	425	12500	12300	411	13600	12700	314	10800
12	12000	364	11800	12200	442	14600	12800	316	10900
13	13100	319	11300	12100	1090	35600	12700	306	10500
14	12500	301	10200	12200	2630	86600	12400	279	9340
15	11900	294	9450	13100	2940	104000	12600	257	8740
16	11300	295	9000	13400	2410	87200	12700	248	8500
17	11100	299	8960	12700	1250	42900	12700	246	8440
18	11500	311	9660	12700	790	27100	12700	253	8680
19	10600	334	9560	13700	1070	39600	12300	263	8730
20	10600	357	10200	14400	1190	46300	12300	223	7410
21	11100	374	11200	14700	1170	46400	12400	169	5660
22	11900	369	11900	15000	1100	44600	12900	127	4420
23	11900	319	10200	15000	1020	41300	12900	107	3730
24	11100	208	6230	14300	1010	39000	13200	152	5420
25	12100	127	4150	14400	1050	40800	13000	260	9130
26	12300	97	3220	14500	1120	43800	12700	162	5550
27	12200	92	3030	14100	1060	40400	12600	107	3640
28	11900	98	3150	13900	780	29300	12800	108	3730
29	11700	111	3510	13500	513	18700	12700	121	4150
30	9880	129	3440	13500	376	13700	12800	140	4840
31	9730	176	4620	13400	331	12000	--	--	--
TOTAL	347810	--	296480	400900	--	952670	384400	--	247630

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	3459950
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	3676761

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
OCT. 01...	1400	13.5	5620	98	1490	40	80	100	--
SEP. 25...	1100	14.5	12900	275	9580	42	57	99	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	BED MAT. FALL DIAM. % FINER THAN .004 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
OCT. 01...	1400	13.5	13	57	92	100	--	--	--	--	--
APR. 29...	1300	10.5	--	2	4	72	97	98	98	99	100
MAY 29...	1630	13.5	--	7	17	89	100	--	--	--	--
JUNE 24...	1600	20.5	3	14	33	89	100	--	--	--	--
JULY 31...	1500	20.0	8	28	49	93	100	--	--	--	--
AUG. 28...	1100	15.5	--	5	14	89	100	--	--	--	--
SEP. 25...	1100	14.5	--	3	11	93	100	--	--	--	--

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT.

LOCATION.--Lat 45°06'43", long 110°47'37", in SE¼NW¼ sec.30, T.8 S., R.8 E., Park County, at gaging station at highway bridge at Corwin Springs, 1.3 mi (2.1 km) upstream from Mol Herron Creek, 7 mi (11 km) northwest of Gardiner, and at mile 530.5 (853.6 km).

DRAINAGE AREA.--2.623 mi^2 (6,794 km^2).
PERIOD OF RECORD.--Chemical analyses: July 1969 to July 1970 (monthly), October 1970 to April 1972 (partial record station), July 1972 to December 1973 (monthly), discontinued.

REMARKS.--Flow affected by natural storage in Yellowstone Lake.

CHEMICAL ANALYSES. OCTOBER TO DECEMBER 1973

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
OCT. 25...	1200	1270	18	5.5	22	32	11	.9	160	.22	544
DEC. 26...	1245	869	21	6.8	27	47	15	1.1	180	.24	422

DATE	HARDNESS (CA,MG) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT. 25...	68	1.2	.13	.25	.14	.11	.09	.10	.09	.8
DEC. 26...	80	1.3	.27	.60	.31	.29	.07	.07	.07	1.7

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT. 25...	1200	7.5	5.5	246	11.8	119	7.3	65	130	0
DEC. 26...	1245	2.0	-4.5	288	13.2	115	7.3	73	7	0

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT.

LOCATION.--Lat 45°35'50", long 110°33'55", in NE¼NW¼NW¼ sec.12, T.3 S., R.9 E., Park County, at gaging station at bridge on former U.S. Highway 89, 2 mi (3.2 km) downstream from Suce Creek, 4 mi (6.4 km) south of Livingston, and at mile 481.3 (774.4 km).

DRAINAGE AREA.--3,551 mi² (9,197 km²).

PERIOD OF RECORD.--Chemical analyses: October 1969 to September 1974.
Water temperatures: October 1969 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 213 mg/l Jan. 1-13; minimum, 71 mg/l June 16-30.
Hardness: Maximum, 110 mg/l Jan. 1-13; minimum, 42 mg/l June 16-30.
Specific conductance: Maximum daily, 346 micromhos Jan. 5; minimum daily, 94 micromhos June 14, 26.
Water temperatures: Maximum, 21.0°C July 23; minimum, freezing point on several days during December to January.
Period of record:
Dissolved solids: Maximum, 216 mg/l Jan. 1-31, 1972; minimum, 68 mg/l June 1-13, 1972.
Hardness: Maximum, 110 mg/l Jan. 1-13, 1974; minimum, 33 mg/l June 1-13, 1972.
Specific conductance: Maximum daily, 398 micromhos Apr. 3, 1970; minimum daily, 87 micromhos June 23, 25, 1970, June 21, 22, 1971, June 6, 1972.
Water temperatures: Maximum, 21.0°C on several days in 1970, 1972, 1973 and 1974; minimum, freezing point on several days during winter periods.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Hardness, 36 mg/l June 25. Flow affected by natural storage in Yellowstone Lake and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	2050	--	22	10	23	6.9	17	3.9	106	0	28
NOV.												
01-13	--	1910	--	24	10	23	7.1	18	4.2	108	0	30
14-30	--	1860	--	24	10	23	7.1	19	4.2	104	0	30
DEC.												
01-31	--	1500	--	26	10	25	7.4	20	4.7	109	0	33
JAN.												
01-13	--	961	--	30	10	28	8.8	22	5.4	123	0	44
14-21	--	1450	--	28	20	25	7.7	20	4.9	110	0	39
22-31	--	1280	--	29	10	27	8.5	22	5.3	116	0	39
FEB.												
01-28	--	1220	--	29	10	27	8.5	22	5.2	117	0	46
MAR.												
01-17	--	1240	--	28	20	27	8.5	22	5.3	120	0	43
18-31	--	1450	--	28	20	26	7.8	21	5.2	111	0	45
APR.												
01-17	--	1690	--	25	40	22	6.8	19	4.9	99	0	34
18-30	--	2950	--	23	10	19	5.7	15	3.6	89	0	26
MAY												
01-15	--	4770	--	21	20	20	5.0	9.6	2.6	87	0	19
16-31	--	7510	--	19	20	14	4.3	7.7	2.1	63	0	16
JUNE												
01-15	--	17400	--	16	40	11	4.2	5.5	1.6	51	0	8.9
16-30	--	27700	--	15	20	11	3.5	5.0	1.6	51	0	7.7
JULY												
01-11	--	16900	--	15	20	9.9	4.4	7.4	1.7	51	--	9.6
12-20	--	11200	--	16	20	12	4.7	9.1	1.9	61	--	12
21-31	--	8090	--	16	20	13	4.8	11	2.2	67	--	15
AUG.												
01-09	--	6190	--	18	10	14	4.0	11	2.7	70	--	15
10-21	--	4830	--	18	0	16	4.5	12	2.7	79	--	17
22-31	--	3760	--	19	20	17	4.5	13	2.9	83	--	19
SEP.												
01-17	--	2990	--	20	20	18	4.8	14	2.1	90	--	21
18-30	--	2440	--	21	10	20	5.1	16	3.1	100	--	24
WTD. AVG.	--	--	--	18	21	15	4.8	9.9	2.4	69	--	16
TIME WTD. AVG.	--	5000	--	23	16	20	6.3	16	3.7	93	--	27
TOT. LOAD (TONS)	--	--	--	89800	102	72800	23600	48700	11900	841000	--	79300

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
26...	1145	1920	6.0	22	30	21	6.8	21	4.1	107	0	28
JAN.												
24...	0915	1320	1.5	30	150	30	8.6	25	4.8	117	0	42
APR.												
22...	1800	2250	11.0	23	70	21	7.5	23	4.0	83	0	47
JUNE												
25...	1615	26400	13.0	14	80	9.8	2.8	6.4	1.2	44	0	8.9

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM AD-SORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
01-31	8.6	.7	.02	.04	163	.22	902	86	0	.8	257	7.8
NOV.												
01-13	9.2	.7	.08	.03	170	.23	877	87	0	.8	265	7.9
14-30	9.0	.8	.08	.03	169	.23	849	87	1	.9	263	7.9
DEC.												
01-31	10	.7	.13	.02	181	.25	733	93	3	.9	286	7.9
JAN.												
01-13	12	.9	.27	.01	213	.29	553	110	5	.9	334	8.0
14-21	11	.8	.26	.02	192	.26	752	94	4	.9	298	8.0
22-31	12	.9	.26	.01	202	.27	698	100	7	.9	318	8.0
FEB.												
01-28	11	1.0	.15	.01	208	.28	685	100	6	.9	323	7.7
MAR.												
01-17	11	.9	.00	.02	205	.28	686	100	4	.9	329	7.6
18-31	11	.8	.02	.02	200	.27	783	97	6	.9	302	7.4
APR.												
01-17	9.9	.8	.01	.01	171	.23	780	83	2	.9	271	8.0
18-30	6.6	.5	.01	.01	143	.19	1140	71	0	.8	219	8.0
MAY												
01-15	4.8	.4	.00	.01	125	.17	1610	71	0	.5	190	8.1
16-31	3.2	.3	.00	.00	98	.13	1990	53	1	.5	142	7.6
JUNE												
01-15	2.0	.2	.00	.02	75	.10	3520	45	3	.4	111	7.7
16-30	1.9	.2	.00	.02	71	.10	5310	42	0	.3	106	7.4
JULY												
01-11	3.1	.3	.00	.01	77	.10	3510	43	1	.5	116	--
12-20	4.2	.4	.01	.01	90	.12	2720	49	0	.6	141	--
21-31	4.8	.5	.01	.01	100	.14	2180	52	0	.7	157	--
AUG.												
01-09	5.1	.5	.00	.01	105	.14	1750	51	0	.7	163	--
10-21	5.5	.6	.00	.02	115	.16	1500	58	0	.7	180	--
22-31	6.0	.6	.00	.01	123	.17	1250	61	0	.7	196	--
SEP.												
01-17	5.9	.6	.01	.01	131	.18	1060	65	0	.8	212	--
18-30	6.9	.6	.00	.01	146	.20	962	71	0	.8	234	--
WTD. AVG.	4.5	.4	.02	.02	105	.14	--	57	1	.6	162	--
TIME WTD. AVG.	7.6	.6	.06	.02	151	.21	--	77	2	.8	235	--
TOT. LOAD (TONS)	22000	1990	81	77	519000	--	--	--	--	--	--	--
ANALYSES OF ADDITIONAL SAMPLES												
OCT.												
26...	8.6	.7	.06	.08	166	.23	820	80	0	1.0	262	8.3
JAN.												
24...	12	1.3	.31	.03	213	.29	765	110	14	1.0	315	7.9
APR.												
22...	11	.9	.08	.02	179	.24	1090	83	14	1.1	236	8.6
JUNE												
25...	2.6	.7	1.2	.01	74	.10	5280	36	0	.5	94	7.9

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
NOV.			
27...	1445	1610	.04
DEC.			
27...	0900	1220	.03
JAN.			
24...	0915	1320	.02
FEB.			
25...	1700	1210	.02
MAR.			
25...	1550	1320	.03
APR.			
22...	1800	2250	.06
MAY			
28...	1040	16300	.04
JUNE			
25...	1615	26400	.01
JULY			
24...	0830	8590	.03
AUG.			
27...	1015	3740	.03
SEP.			
24...	1455	2410	.04

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	248	253	260	318	317	314	271	217	126	114	153	198
2	248	255	263	318	311	305	271	203	112	114	153	203
3	248	279	265	318	308	308	271	192	104	125	166	203
4	250	269	267	318	314	308	271	191	108	125	169	203
5	250	279	272	346	314	321	271	179	107	117	161	---
6	252	264	272	342	317	323	273	178	108	118	161	203
7	275	253	273	320	333	319	260	179	117	118	163	204
8	252	251	264	320	323	324	253	157	116	120	161	204
9	250	253	262	320	319	320	296	168	116	124	161	204
10	248	253	266	320	319	320	251	147	124	127	180	204
11	254	255	269	320	319	328	251	151	139	127	163	204
12	254	253	266	320	319	330	251	159	112	158	165	206
13	254	251	266	322	319	331	251	174	98	133	180	208
14	252	238	276	319	316	338	253	168	94	138	191	219
15	254	243	288	273	316	321	262	197	99	151	172	218
16	248	243	288	273	313	321	251	201	97	143	170	219
17	254	255	288	271	313	335	251	203	104	143	180	219
18	256	251	269	280	313	283	249	189	100	144	180	229
19	254	253	266	295	313	280	251	191	112	143	180	226
20	254	255	269	295	313	305	239	178	107	143	191	226
21	256	260	269	301	313	308	239	159	104	192	180	226
22	256	255	281	322	313	308	234	169	101	147	191	234
23	256	260	276	322	320	308	232	180	108	152	191	231
24	254	255	273	322	317	318	221	179	113	151	191	231
25	254	258	272	320	318	308	213	157	97	151	191	234
26	254	258	282	320	315	308	186	130	94	151	190	234
27	254	258	287	317	315	305	185	119	103	153	194	231
28	256	258	287	320	315	291	176	116	107	159	190	234
29	256	258	285	320	---	283	187	102	108	159	194	234
30	256	255	285	320	---	280	204	106	107	159	195	234
31	256	---	290	320	---	277	---	135	---	159	195	---
MONTH	254	256	274	313	316	311	242	168	108	141	177	218
YEAR	MAX	346	MIN	94	MEAN	231						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	4.5	5.0	0.5	4.0	6.0	6.5	10.0	12.0	14.0	19.0	13.0
2	11.0	2.5	4.5	0.5	3.5	4.0	7.0	11.0	12.5	13.0	18.0	14.5
3	11.0	2.0	3.0	0.5	3.0	4.0	7.5	11.0	11.0	13.5	16.0	15.0
4	11.0	1.5	2.5	0.5	3.0	2.5	8.5	11.5	8.5	14.0	18.0	14.5
5	11.0	2.0	2.0	0.5	2.5	3.5	8.5	12.5	7.5	15.0	19.5	15.5
6	10.5	2.0	1.5	0.5	2.0	4.0	7.5	10.0	8.0	16.0	19.0	16.0
7	9.5	2.0	3.0	1.0	3.0	2.5	8.0	10.5	8.0	16.5	18.0	16.5
8	7.5	2.5	3.5	0.5	3.5	3.0	8.5	10.5	9.5	16.0	16.0	15.0
9	7.0	5.0	3.0	0.5	3.5	4.0	9.5	9.5	12.5	17.0	15.0	15.5
10	8.5	7.5	3.0	0.5	4.0	6.0	7.0	7.5	13.0	17.0	16.0	15.0
11	8.5	8.0	3.0	0.5	4.0	6.5	9.0	8.5	11.0	16.5	16.5	11.5
12	7.5	8.5	3.0	1.0	3.5	7.0	7.0	8.5	11.0	17.0	16.0	11.5
13	10.5	6.0	3.0	1.5	4.0	5.5	6.5	6.5	11.0	18.0	16.5	12.5
14	11.5	5.5	3.0	1.5	3.5	6.0	9.0	7.0	11.0	18.0	15.0	13.5
15	9.5	5.0	3.5	2.0	5.0	5.0	12.0	6.5	---	17.5	16.5	14.0
16	11.5	5.5	4.0	3.5	4.5	7.0	11.0	8.5	---	19.0	17.0	14.5
17	12.0	5.0	4.5	3.0	5.0	8.5	13.0	8.0	---	19.0	18.0	14.5
18	12.0	4.0	3.0	2.5	4.5	9.0	12.0	10.5	---	18.0	17.5	15.0
19	11.5	4.0	2.5	2.5	4.0	4.5	11.0	11.0	---	19.5	17.0	13.5
20	10.0	2.5	1.0	3.0	4.5	4.0	8.5	7.5	10.5	19.5	14.5	13.5
21	9.0	3.0	3.0	2.5	3.5	3.0	10.0	8.0	10.5	19.0	16.0	13.0
22	11.0	2.5	3.5	2.0	2.0	2.0	12.0	10.0	12.0	19.0	16.0	13.5
23	9.5	2.5	4.0	3.0	3.0	4.0	13.0	11.5	12.0	21.0	18.0	14.0
24	9.0	3.0	3.5	3.5	2.5	3.0	14.5	13.0	13.5	19.5	17.0	13.5
25	8.5	1.5	2.0	3.5	2.0	7.5	13.0	13.0	13.0	20.0	17.5	14.0
26	8.0	2.5	2.0	4.0	3.5	9.5	11.0	11.5	14.0	19.5	18.0	13.5
27	8.0	2.0	0.5	3.0	3.5	11.0	7.5	11.0	13.0	19.0	18.0	12.0
28	9.0	3.0	2.5	3.0	4.0	7.5	7.0	9.5	14.0	19.5	18.0	13.0
29	7.0	4.0	1.0	2.0	---	6.5	9.0	7.0	14.0	20.0	18.5	11.5
30	6.0	6.0	1.5	2.5	---	7.0	11.0	8.5	16.0	18.5	16.5	12.0
31	5.0	---	0.5	2.0	---	7.5	---	8.0	---	18.5	16.0	---
MONTH	9.5	4.0	3.0	2.0	3.5	5.5	9.5	9.5	11.5	17.5	17.0	14.0
YEAR	MAX	21.0	MIN	0.0	MEAN	9.0						

06205200 YELLOWSTONE RIVER AT LAUREL, MT.

LOCATION.--Lat 45°39'15", long 108°45'32", in SW¼SW¼SW¼ sec.15, T.2 S., R.24 E., Yellowstone County, at bridge on U.S. Highway 310, 2.5 mi (4.0 km) upstream from Clarks Fork Yellowstone River, 1.3 mi (2.1 km) southeast of Laurel and at mile 396.3 (637.6 km).

DRAINAGE AREA.--11,003 mi² (28,498 km²).

PERIOD OF RECORD.--Chemical analyses: February to September 1974.

REMARKS.--Water discharge computed by subtracting the discharge of Clarks Fork near Silesia, Mt. (station 06208800) from that of Yellowstone River at Billings, Mt. (station 06214500).

CHEMICAL ANALYSES, FEBRUARY TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
FEB.											
14...	1200	2500	16	33	10	21	3.9	144	0	43	8.0
MAR.											
04...	1300	2460	14	32	9.2	21	3.5	141	1	42	8.7
20...	1315	3310	--	--	--	--	--	--	--	--	--
29...	1330	3190	14	32	9.1	19	4.0	142	0	35	7.1
APR.											
17...	1315	3100	--	--	--	--	--	--	--	--	--
29...	1500	6500	--	--	--	--	--	--	--	--	--
MAY											
13...	1230	7300	--	--	--	--	--	--	--	--	--
24...	1330	5510	14	23	6.3	13	2.3	97	3	24	4.2
JUNE											
13...	1400	[illegible]	--	--	--	--	--	--	--	--	--
21...	1030	50900	.0	12	2.9	5.1	1.7	58	--	7.9	1.6
JULY											
10...	1330	23200	--	--	--	--	--	--	--	--	--
31...	1000	9100	--	--	--	--	--	--	--	--	--
AUG.											
13...	1130	7130	--	--	--	--	--	--	--	--	--
21...	1145	6010	--	--	--	--	--	--	--	--	--
SEP.											
05...	1000	4930	--	--	--	--	--	--	--	--	--
19...	1230	4030	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER DAY)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	OIL AND GREASE (MG/L)	SUSPENDED SOLIDS (MG/L)	TURBIDITY (JTU)
FEB.											
14...	--	206	1250	.28	120	5	.8	9	--	9	5
MAR.											
04...	--	201	1400	.27	120	0	.8	11	--	8	3
20...	175	--	1570	.24	--	--	--	40	--	169	70
29...	212	190	1830	.29	120	1	.8	36	--	91	60
APR.											
17...	183	--	1530	.25	--	--	--	6	13	12	5
29...	128	--	2250	.17	--	--	--	21	8	89	30
MAY											
13...	123	--	2450	.17	--	--	--	14	--	63	20
24...	142	130	2110	.19	83	9	.6	10	--	9	7
JUNE											
13...	75	--	5810	.10	--	--	--	16	--	191	40
21...	78	60	10700	.11	42	0	.3	14	--	472	100
JULY											
10...	82	--	5140	.11	--	--	--	9	--	87	30
31...	104	--	2560	.14	--	--	--	17	--	14	2
AUG.											
13...	120	--	2460	.17	--	--	--	10	--	16	4
21...	147	--	2700	.20	--	--	--	6	--	12	4
SEP.											
05...	146	--	1940	.20	--	--	--	8	--	6	3
19...	155	--	1690	.21	--	--	--	1	--	1	3

06205200 YELLOWSTONE RIVER AT LAUREL, MT.--Continued

CHEMICAL ANALYSES, FEBRUARY TO SEPTEMBER 1974

DATE	TIME	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
FEB.									
14...	1200	.35	.24	.05	.29	.06	.03	--	2.7
MAR.									
04...	1300	.34	.23	.04	.27	.07	.02	--	2.9
20...	1315	1.8	.97	.43	1.4	.38	.20	6.1	14
29...	1330	1.0	.78	.22	1.0	.03	.14	3.9	11
APR.									
17...	1315	.35	.18	.16	.34	.01	.00	1.9	4.5
29...	1500	.84	.52	.14	.66	.18	.15	3.7	9.2
MAY									
13...	1230	.43	.37	.06	.43	.00	.12	--	5.5
24...	1330	.19	.09	.09	.18	.01	.04	1.4	6.4
JUNE									
13...	1400	.74	.67	.07	.74	.00	.26	1.5	--
21...	1030	1.0	.00	--	1.0	.00	1.0	1.3	9.5
JULY									
10...	1330	.43	.30	.04	.34	.09	.14	.7	4.0
31...	1000	.62	.55	.07	.62	.00	.04	--	4.2
AUG.									
13...	1130	.47	.36	.06	.42	.05	.06	1.0	7.7
21...	1145	.41	.25	.12	.37	.04	.03	1.9	3.0
SEP.									
05...	1000	.55	.31	.11	.42	.13	.04	1.1	4.0
19...	1230	.26	.20	.02	.22	.04	.02	1.5	2.1

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
MAR.									
29...	1330	--	20	3600	<100	130	--	2	90
APR.									
29...	1500	10	30	3200	<100	120	--	0	80
MAY									
24...	1330	12	40	550	<100	30	--	1	80
JUNE									
21...	1030	22	40	9800	<100	320	.0	1	440

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
FEB.										
14...	1200	1.0	6.0	342	12.8	102	8.1	118	11	2
MAR.										
04...	1300	1.5	4.0	337	12.8	102	8.1	117	2	0
20...	1315	2.0	.0	277	11.2	92	7.5	--	--	57
29...	1330	8.0	18.0	324	9.8	94	7.7	116	10	10
APR.										
17...	1315	13.5	15.0	310	10.7	116	8.5	--	60	40
29...	1500	11.0	24.5	238	10.8	111	7.9	--	30	30
MAY										
13...	1230	7.5	8.5	170	10.2	98	7.4	--	110	45
24...	1330	17.0	23.0	226	10.5	124	8.6	85	43	7
JUNE										
13...	1400	16.0	30.5	140	8.9	102	7.6	--	--	--
21...	1030	14.5	20.5	115	9.0	100	7.8	48	2400	380
JULY										
10...	1330	19.0	29.0	160	8.3	102	7.8	--	660	660
31...	1000	19.5	22.5	190	8.0	96	8.1	--	300	24
AUG.										
13...	1130	17.5	20.0	230	8.8	105	7.0	--	510	23
21...	1145	15.5	18.0	245	9.4	107	8.0	--	5800	86
SEP.										
05...	1000	15.0	19.0	310	8.6	97	8.2	--	3800	58
19...	1230	14.5	20.0	315	9.6	107	8.1	--	550	3

06207500 CLARKS FORK YELLOWSTONE RIVER NEAR BELFRY, MT.

LOCATION.--Lat 45°00'40", long 109°04'00", in E½NE¼ sec.31, T.9 S., R.22 E., Carbon County, at bridge on county road, 0.4 mi (0.6 km) downstream from gaging station, just upstream from Sand Coulee, 0.8 mi (1.3 km) north of Wyoming-Montana State line, 9.5 mi (15.3 km) southwest of Belfry, and at mile 78.1 (125.7 km).

DRAINAGE AREA.--1,154 mi² (2,989 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: October 1965 to September 1969 (daily), October 1969 to September 1974 (monthly).
Water temperatures: October 1965 to September 1969.
Sediment records: April to August 1971.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
OCT.												
01...	1830	394	8.8	31	9.9	9.1	1.4	113	6	37	1.5	.2
DEC.												
04...	1130	263	8.7	42	13	12	1.4	140	4	60	.3	.2
JAN.												
18...	0945	331	10	36	11	9.6	1.4	131	0	48	1.9	.2
FEB.												
20...	1605	214	10	42	13	11	1.4	149	3	52	1.9	.2
MAR.												
27...	1530	303	7.3	41	14	12	1.6	149	0	62	1.9	1.0
APR.												
29...	1530	660	10	32	3.1	8.6	1.2	100	0	24	1.9	.1
MAY												
21...	1655	653	10	30	1.9	6.4	.5	79	6	19	1.8	.2
JUNE												
19...	1700	9050	6.8	15	.3	2.7	.5	52	0	2.5	.0	.1
JULY												
18...	1745	2760	5.0	10	4.1	3.2	.5	49	0	9.9	.0	.1
AUG.												
22...	1120	551	6.0	23	9.3	7.5	.9	110	0	21	.0	.2
SEP.												
04...	1010	384	7.3	28	10	5.9	1.4	130	0	21	.0	.1
30...	1610	A226	8.4	41	15	11	2.1	170	3	44	.0	.2

A Daily mean discharge

DATE	DISSOLVED NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)
OCT.											
01...	.07	--	160	.22	170	120	17	.4	273	8.7	14.0
DEC.											
04...	.09	.00	211	.29	150	160	38	.4	361	8.5	1.0
JAN.											
18...	.16	.04	183	.25	164	140	33	.4	316	8.0	.0
FEB.											
20...	.09	.01	208	.28	120	160	33	.4	344	8.4	4.0
MAR.											
27...	.00	.06	213	.29	174	160	38	.4	347	8.2	9.0
APR.											
29...	.09	.01	130	.18	232	93	11	.4	216	8.1	12.0
MAY											
21...	.07	.00	115	.16	203	83	8	.3	177	8.5	8.0
JUNE											
19...	.20	.01	54	.07	1320	40	0	.2	94	8.2	11.5
JULY											
18...	.05	.00	57	.08	425	43	3	.2	93	7.8	19.0
AUG.											
22...	.09	.00	122	.17	182	95	5	.3	210	8.3	13.5
SEP.											
04...	.07	.00	137	.19	142	110	3	.2	248	8.3	12.0
30...	.18	.01	208	.28	127	170	26	.4	352	8.4	12.5

06207510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE

LOCATION.--Lat 45°00'17", long 109°03'29", in SE¼NE¼SW¼ sec.32, T.9 S., R.22 E., Carbon County, Mont., at gaging station, 0.3 mi (0.5 km) north of Wyoming-Montana State line, and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--134 mi² (347 km²).

PERIOD OF RECORD.--Water temperatures: May to October 1973, March to September 1974.
Sediment records: May to October 1973, March to September 1974.

EXTREMES.--October 1973, March to September 1974:
Water temperatures: Maximum 24.0°C July 19, minimum, 6.0°C Oct. 31, Mar. 6.
Sediment concentrations: Maximum daily, 1,950 mg/l June 8; minimum daily, 9 mg/l Mar. 27.
Sediment discharge: Maximum daily, 421 tons (382 tonnes) June 8; minimum daily, 0.04 tons (0.04 tonne) Mar. 27, Apr. 19-21.

Period of record:
Water temperatures: Maximum 24.0°C July 5, 6, 11, 1973, July 19, 1974; minimum, 6.0°C Oct. 31, 1973, Mar. 6, 1974.
Sediment concentrations: Maximum daily, 11,800 mg/l Sept. 8, 1973; minimum daily, 9 mg/l Mar. 27, 1974.
Sediment discharge: Maximum daily, 8,470 tons (7,680 tonnes) Sept. 9, 1973; minimum daily, 0.04 ton (0.04 tonne) Mar. 27, Apr. 19-21, 1974.

TEMPERATURE (°C) OF WATER, OCTOBER 1973, MARCH TO SEPTEMBER 1974
(ONCE-DAILY MEASUREMENTS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	---	---	---	---	13.0	13.0	15.0	15.0	18.0	20.0	17.0
2	12.0	---	---	---	---	9.0	10.0	10.5	16.0	16.0	20.0	16.0
3	10.0	---	---	---	---	8.0	11.0	14.0	16.0	16.0	21.0	15.0
4	10.0	---	---	---	---	7.0	15.0	15.0	15.0	20.0	20.0	14.5
5	12.0	---	---	---	---	8.0	15.0	16.0	11.0	21.0	20.0	17.0
6	12.0	---	---	---	---	6.0	14.0	11.0	14.0	20.0	18.0	18.0
7	14.0	---	---	---	---	10.0	14.5	15.0	---	20.0	16.0	18.0
8	8.0	---	---	---	---	10.0	15.0	17.0	19.0	21.0	15.5	19.0
9	7.0	---	---	---	---	10.0	16.0	12.0	20.0	20.0	14.0	17.0
10	9.0	---	---	---	---	11.0	7.0	7.0	16.0	20.0	18.0	15.0
11	9.0	---	---	---	---	13.0	9.0	12.0	19.0	20.0	15.0	9.0
12	9.0	---	---	---	---	11.0	8.0	16.0	20.0	21.0	17.0	10.0
13	11.0	---	---	---	---	10.0	11.5	9.0	21.0	21.0	15.0	11.0
14	15.0	---	---	---	---	12.0	12.0	14.0	20.0	21.0	17.0	16.0
15	12.0	---	---	---	---	11.0	10.0	11.0	15.0	21.0	18.0	16.0
16	12.0	---	---	---	---	14.0	17.0	12.0	20.0	21.0	15.0	16.0
17	13.0	---	---	---	---	10.0	14.5	12.0	20.0	21.0	16.0	16.0
18	11.0	---	---	---	---	11.0	17.0	11.0	21.0	21.0	19.0	14.0
19	12.0	---	---	---	---	10.0	15.0	19.0	18.0	24.0	20.0	15.0
20	10.0	---	---	---	---	10.0	16.0	8.0	22.0	21.0	14.0	14.0
21	11.0	---	---	---	---	12.0	18.0	9.5	18.0	23.0	17.0	11.0
22	13.0	---	---	---	---	11.0	20.0	17.0	17.0	20.0	16.0	14.0
23	12.0	---	---	---	---	10.0	16.5	17.0	16.0	19.0	19.0	12.0
24	13.0	---	---	---	---	11.0	14.0	15.0	23.0	19.0	18.0	15.0
25	9.0	---	---	---	---	13.0	16.0	17.0	21.0	22.0	19.0	17.0
26	9.0	---	---	---	---	13.0	16.0	20.0	21.0	---	17.0	18.0
27	7.0	---	---	---	---	15.0	11.0	16.0	20.0	20.0	18.0	11.0
28	10.0	---	---	---	---	12.5	12.0	16.0	19.0	21.0	16.0	11.0
29	8.0	---	---	---	---	12.0	12.0	12.0	20.0	20.0	18.0	11.0
30	7.0	---	---	---	---	13.0	12.0	12.0	23.0	20.0	17.0	15.0
31	6.0	---	---	---	---	14.0	---	11.0	---	20.0	18.0	---
MONTH	10.5	---	---	---	---	11.0	13.5	13.5	18.5	20.5	17.5	14.5
YEAR	MAX	24.0	MIN	6.0	MEAN	15.0						

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
[illegible]	[illegible]	[illegible]	[illegible]	9	[illegible]	--	--	--	--	--	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	--	--	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	--

06207510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE--Continued

SUSPENDED-SEDIMENT DISCHARGE, OCTOBER 1973, MARCH TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	89	80	19						
2	82	140	31						
3	76	175	36						
4	80	126	27						
5	82	172	38						
6	77	142	30						
7	77	138	29						
8	75	164	33						
9	84	158	36						
10	84	152	34						
11	78	148	31						
12	78	128	27						
13	75	157	32						
14	61	112	18						
15	60	122	20						
16	63	114	19						
17	54	116	17						
18	43	110	13						
19	48	102	13						
20	47	98	12						
21	43	126	15						
22	44	107	13						
23	50	122	16						
24	35	132	12						
25	41	118	13						
26	47	98	12						
27	49	92	12						
28	51	90	12						
29	46	108	13						
30	51	98	13						
31	62	112	19						
TOTAL	1932	--	665						

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1							2.9	50	.40
2							2.8	48	.37
3							2.8	25	.19
4							2.6	19	.13
5							2.6	17	.12
6							2.4	19	.12
7							2.4	22	.14
8							2.4	25	.17
9							2.1	26	.16
10							2.1	27	.15
11							1.9	26	.13
12							1.9	18	.09
13							1.8	15	.07
14							1.7	11	.05
15							1.7	14	.06
16							[illegible]	[illegible]	[illegible]
17							[illegible]	[illegible]	[illegible]
18							[illegible]	[illegible]	[illegible]
19							[illegible]	[illegible]	[illegible]
20							[illegible]	[illegible]	[illegible]
21							[illegible]	[illegible]	[illegible]
22							[illegible]	[illegible]	[illegible]
23							[illegible]	[illegible]	[illegible]
24							[illegible]	[illegible]	[illegible]
25							[illegible]	[illegible]	[illegible]
26							[illegible]	[illegible]	[illegible]
27							[illegible]	[illegible]	[illegible]
28							[illegible]	[illegible]	[illegible]
29							[illegible]	[illegible]	[illegible]
30							[illegible]	[illegible]	[illegible]
31							[illegible]	[illegible]	[illegible]
TOTAL							[illegible]	--	[illegible]

06207510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE--Continued

SUSPENDED-SEDIMENT DISCHARGE, OCTOBER 1973, MARCH TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2.2	12	.07	46	440	55	54	190	28
2	2.2	10	.06	40	750	81	52	190	27
3	1.9	14	.07	48	910	118	67	210	38
4	1.7	32	.15	53	760	109	71	200	38
5	1.7	45	.21	50	630	85	76	240	49
6	1.7	32	.15	51	500	69	63	200	34
7	1.7	25	.11	40	280	30	55	1090	162
8	1.6	28	.12	36	300	29	80	1950	421
9	1.6	24	.10	32	420	36	75	810	164
10	1.6	34	.15	39	400	42	82	530	117
11	1.8	38	.18	40	300	32	78	300	63
12	1.7	41	.19	44	350	42	80	200	43
13	1.6	32	.14	50	320	43	84	260	59
14	1.6	32	.14	50	400	54	90	490	119
15	1.5	44	.18	52	390	55	84	500	113
16	1.5	48	.19	46	430	53	75	230	47
17	1.4	21	.08	45	460	56	63	350	60
18	1.2	15	.05	49	480	64	75	290	59
19	1.3	11	.04	72	650	126	87	700	164
20	1.3	11	.04	91	840	206	85	350	80
21	1.4	10	.04	89	780	187	85	262	60
22	1.3	14	.05	80	640	138	66	260	46
23	11	25	80	73	760	150	57	164	25
24	41	1640	182	69	510	95	61	142	23
25	41	1650	183	76	470	96	89	160	38
26	45	1490	181	90	550	134	66	148	26
27	45	750	91	104	730	205	64	122	21
28	45	610	74	91	720	177	63	150	26
29	43	310	36	91	410	101	61	158	26
30	39	190	20	81	250	55	61	150	25
31	--	--	--	69	230	43	--	--	--
TOTAL	345.5	--	849.51	1887	--	2766	2149	--	2201

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	65	142	25	56	190	29	66	82	15
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	--	[illegible]	[illegible]	--	[illegible]	[illegible]	--	[illegible]

TOTAL DISCHARGE FOR PERIOD (CFS-DAYS) [illegible]
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR PERIOD (TONS) [illegible]

06207540 SILVER TIP CREEK NEAR BELFRY, MT.

LOCATION.--Lat 45°09'32", long 108°58'31", in NE¼NW¼ sec.12, T.8 S., R.22 E., Carbon County, at gaging station 0.1 mi (0.2 km) upstream from county bridge, 1.5 mi (2.4 km) upstream from mouth and 2.0 mi (3.2 km) northeast of Belfry.

DRAINAGE AREA.--88.0 mi² (228 km²). Area at site used prior to May 12, 1972, 87.6 mi² (227 km²).

PERIOD OF RECORD.--Chemical analyses: October 1968 to March 1972 (daily), April 1972 to September 1974 (monthly).
Water temperatures: October 1968 to April 1972.
Sediment records: October 1968 to April 1972 (daily), May 1972 to June 1973 (monthly), July to December 1973 (partial-record station), January to September 1974 (daily).

REMARKS.--No flow for many days during water year. Flow affected by ice most of winter months. Flow affected by oil recovery operations upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT.												
10...	1030	1.5	4.0	8.2	40	270	120	890	24	309	0	2300
24...	1130	.06	8.0	5.6	0	230	130	1000	74	290	0	2400
NOV.												
12...	1130	1.5	.5	6.3	10	180	83	650	24	258	0	1600
JAN.												
16...	1040	16	.5	5.4	20	140	53	490	27	192	0	1300
MAR.												
26...	1300	1.7	5.0	7.7	30	230	120	840	22	307	0	2200
APR.												
10...	1000	.32	4.5	10	100	290	140	1100	41	333	0	2800
25...	1000	.34	11.5	13	30	280	140	1200	53	303	0	2700
MAY												
10...	1050	.94	9.5	11	40	180	90	670	32	233	0	1700
24...	1100	.25	17.5	10	20	290	150	1100	46	282	0	2900
JUNE												
09...	1630	2.0	--	8.2	10	220	88	770	28	299	0	2000
17...	1650	.36	--	9.6	40	270	150	1200	18	272	0	2900
SEP.												
11...	1230	.37	8.0	4.6	50	130	50	490	26	207	--	1200
23...	1020	.48	6.0	9.6	0	270	140	1100	47	279	--	2700

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
10...	[illegible]	.9	.02	.05	4600	6.25	18.6	1200	910	11	5300	8.1
24...	340	.5	.02	.04	4320	5.88	.70	1100	870	13	5070	7.7
NOV.												
12...	[illegible]	.9	.00	.05	2890	3.93	11.6	790	580	10	4000	7.9
JAN.												
16...	130	.7	.40	.01	2340	3.05	96.3	570	410	9.0	2900	7.5
MAR.												
26...	300	.7	.00	.02	3890	5.29	18.0	1100	800	11	[illegible]	8.1
APR.												
10...	[illegible]	1.0	.77	.03	4950	6.73	4.20	1300	1000	13	[illegible]	8.0
25...	[illegible]	1.0	.75	.03	5080	6.90	4.60	1300	1000	15	[illegible]	7.8
MAY												
10...	300	.9	.30	.02	3040	4.00	7.07	820	630	10	[illegible]	8.2
24...	[illegible]	.6	.06	.07	5070	6.96	4.04	1300	1100	13	[illegible]	7.9
JUNE												
09...	[illegible]	1.0	.06	.02	3600	5.07	20.0	910	650	11	[illegible]	7.8
17...	[illegible]	[illegible]	.06	.06	6060	7.69	5.80	1300	1100	15	[illegible]	8.0
SEP.												
11...	130	.5	.00	.03	2160	2.93	2.14	650	500	8.3	3600	--
23...	[illegible]	1.0	.07	.00	4490	[illegible]	[illegible]	1300	1000	14	[illegible]	8.1

06207540 SILVER TIP CREEK NEAR BELFRY, MONT.--Continued

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
OCT.											
10...	0950	4.0	1.5	1020	4.1	--	--	--	--	--	--
16...	1050	6.5	1.1	416	1.2	--	--	--	--	--	--
24...	1200	8.0	.10	215	.06	--	--	--	--	--	--
29...	1400	7.0	.40	241	.26	--	--	--	--	--	--
NOV.											
12...	1100	.5	1.5	5530	22	--	--	--	--	--	--
19...	1600	.0	.10	466	.13	--	--	--	--	--	--
29...	1000	.0	.20	140	.08	--	--	--	--	--	--
MAR.											
12...	1845	3.0	.10	29500	8.0	29	45	94	99	100	--
25...	1900	2.0	.80	33400	72	26	52	93	99	100	--
APR.											
13...	1640	5.0	1.9	10200	94	68	88	96	99	100	--
JUNE											
08...	1140	6.0	18	47900	2330	30	41	69	89	99	100
JULY											
03...	1145	16.0	1.5	26300	107	62	74	94	99	100	--
SEP.											
11...	1230	8.0	.37	18500	190	69	85	96	99	100	--

SUSPENDED-SEDIMENT DISCHARGE, JANUARY TO SEPTEMBER 1974

DAY	JANUARY MEAN DISCHARGE (CFS)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY SEDIMENT DISCHARGE (TONS/DAY)	FEBRUARY MEAN DISCHARGE (CFS)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY SEDIMENT DISCHARGE (TONS/DAY)	MARCH MEAN DISCHARGE (CFS)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH SEDIMENT DISCHARGE (TONS/DAY)
1	0	--	--	.10	560	.15	.40	4950	5.3
2	0	--	--	.10	558	.15	.20	5400	2.9
3	0	--	--	.10	488	.13	.10	3590	.97
4	0	--	--	.10	373	.10	.10	2090	.56
5	0	--	--	.10	302	.08	.10	5320	1.4
6	0	--	--	0	--	--	.10	3980	1.1
7	0	--	--	0	--	--	.10	3890	1.1
8	0	--	--	0	--	--	.10	9410	2.5
9	0	--	--	0	--	--	.10	5880	1.6
10	0	--	--	0	--	--	.10	10100	2.7
11	0	--	--	0	--	--	.10	16600	4.5
12	0	--	--	0	--	--	.10	24800	6.7
13	0	--	--	0	--	--	.10	15300	4.1
14	0	--	--	0	--	--	0	--	--
15	8.0	6900	149	0	--	--	0	--	--
16	15	15600	626	0	--	--	0	--	--
17	11	6910	205	0	--	--	0	--	--
18	6.0	1560	25	0	--	--	0	--	--
19	4.0	6580	71	0	--	--	0	--	--
20	3.0	823	6.7	0	--	--	0	--	--
21	2.0	297	1.6	0	--	--	0	--	--
22	1.0	293	.80	0	--	--	0	--	--
23	.40	212	.23	0	--	--	0	--	--
24	.50	665	.90	0	--	--	0	--	--
25	.10	381	.10	0	--	--	.80	17100	37
26	.10	210	.06	0	--	--	1.7	[illegible]	67
27	.10	283	.07	.30	796	.64	.80	[illegible]	86
28	.10	350	.09	.60	[illegible]	[illegible]	.30	5110	4.1
29	.10	430	.12	--	--	--	.20	1880	1.0
30	.10	490	.13	--	--	--	0	--	--
31	.10	590	.16	--	--	--	0	--	--
TOTAL	[illegible]	--	[illegible]	1.40	--	[illegible]	[illegible]	--	[illegible]

06207540 SILVER TIP CREEK NEAR BELFRY, MONT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, JANUARY TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	0	--	--	.90	2000	4.9	0	--	--
2	0	--	--	.90	2540	6.2	0	--	--
3	0	--	--	.30	2280	1.8	0	--	--
4	0	--	--	.10	1670	.45	0	--	--
5	0	--	--	.10	2000	.54	.10	410	.11
6	1.1	1180	3.5	.10	2120	.57	.20	2290	1.2
7	.90	1300	3.2	.70	3100	5.9	.50	2710	3.7
8	1.6	1750	7.6	.80	3680	7.9	13	31900	1120
9	1.4	1650	6.2	.70	4100	7.7	3.4	9300	85
10	1.1	2040	6.1	.90	2600	6.3	1.0	5820	16
11	.90	9100	22	1.0	2000	5.4	.70	5920	11
12	.80	10500	23	.70	1300	2.5	.50	3810	4.5
13	1.7	10700	49	.50	800	1.1	0	--	--
14	5.2	11100	156	.70	2420	4.6	0	--	--
15	5.2	10700	150	.80	6800	15	0	--	--
16	3.6	8790	85	1.0	4390	12	.10	710	.19
17	2.2	8890	53	1.0	3660	9.9	.20	1220	.66
18	2.0	7140	39	.90	1700	4.1	.30	1120	.91
19	1.7	3600	17	.80	1430	3.1	.50	1060	1.4
20	1.2	2020	6.5	1.7	5080	23	0	--	--
21	.80	2090	4.5	1.8	3800	18	0	--	--
22	.40	2080	2.2	1.8	2290	11	0	--	--
23	1.3	3820	13	1.4	2210	8.4	0	--	--
24	1.3	3330	12	.40	2120	2.3	0	--	--
25	.40	3500	3.8	.30	2890	2.3	0	--	--
26	.60	3750	6.1	1.3	2180	7.7	0	--	--
27	.90	5420	13	1.2	2200	7.1	0	--	--
28	1.3	3110	11	1.0	3100	8.4	0	--	--
29	1.3	2280	8.0	.30	1180	.96	0	--	--
30	1.1	2850	8.5	1.0	1950	5.3	0	--	--
31	--	--	--	1.6	4480	19	--	--	--
TOTAL	40.00	--	709.2	26.70	--	213.42	20.80	--	1244.67

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	0	--	--	0	--	--	0	--	--
2	.90	3000	8.6	0	--	--	0	--	--
3	1.6	25000	108	0	--	--	0	--	--
4	.20	5200	2.8	0	--	--	0	--	--
5	0	--	--	0	--	--	0	--	--
6	0	--	--	0	--	--	0	--	--
7	0	--	--	0	--	--	0	--	--
8	0	--	--	0	--	--	0	--	--
9	0	--	--	0	--	--	0	--	--
10	0	--	--	0	--	--	0	--	--
11	0	--	--	0	--	--	1.0	[illegible]	[illegible]
12	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
13	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
14	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
15	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
16	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
17	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
18	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
19	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
20	0	--	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	0	--	--	[illegible]	[illegible]	13	[illegible]	[illegible]	[illegible]
22	0	--	--	.20	1100	[illegible]	[illegible]	[illegible]	[illegible]
23	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
24	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
25	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
26	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
27	0	--	--	0	--	--	[illegible]	[illegible]	[illegible]
28	0	--	--	0	--	--	0	--	--
29	0	--	--	0	--	--	0	--	--
30	0	--	--	0	--	--	0	--	--
31	0	--	--	0	--	--	--	--	--
TOTAL	[illegible]	--	[illegible]	[illegible]	--	[illegible]	[illegible]	--	[illegible]

TOTAL [illegible] [illegible]
TOTAL [illegible] [illegible]

06214500 YELLOWSTONE RIVER AT BILLINGS, MT.

(Irrigation network and radiochemical station)

LOCATION.--Lat 45°47'48", long 108°28'12", in NE¼NE¼ sec.34, T.1 N., R.26 E., Yellowstone County, at city of Billings Water Department intake, 1 mi (1.6 km) east of Billings, 1.8 mi (2.9 km) upstream from gaging station at bridge on U.S. Highway 87, 11.8 mi (19.0 km) upstream from Pryor Creek, and at mile 347.8 (559.6 km).

DRAINAGE AREA.--11,795 mi² (30,549 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: October 1950 to September 1958 (daily), July 1963 to December 1969 (daily), January 1970 to September 1974 (monthly).

Water temperatures: December 1950 to September 1958 (at highway bridge), July 1963 to September 1968 (at water department intake), October 1968 to September 1970 (at both sites), October 1970 to September 1974 (at water department intake).

EXTREMES.--1973-74:

Specific conductance: Maximum daily, 654 micromhos Jan. 7; minimum daily, 130 micromhos June 27.

Water temperatures: Maximum recorded, 22.0°C July 25, 27, 29, 30, Aug. 6; minimum, freezing point on many days during November to February.

Period of record:

Specific conductance: Maximum daily, 1,210 micromhos Feb. 2, 1951; minimum daily, 111 micromhos June 9, 1973.

Water temperatures: Maximum, 26.5°C July 24, 1955; minimum, freezing point on many days during winter periods.

REMARKS.--Temperature recorder stopped Oct. 10, 11, May 21 to June 2, Aug. 21 to Sept. 4. Miscellaneous periodic determinations of suspended-sediment data published for May to September 1951. Flow affected by diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
11...	1320	4610	8.5	15	10	48	15	31	3.1	156	3	94
NOV.												
08...	1500	4450	.0	17	80	43	15	29	3.2	167	0	78
JAN.												
14...	1530	2680	.0	19	10	49	17	28	3.0	180	0	86
FEB.												
08...	1235	2730	.5	16	40	48	16	35	3.6	171	0	98
MAR.												
01...	1600	2550	5.5	13	30	47	16	32	3.9	165	2	91
APR.												
11...	1100	3770	9.0	12	20	39	13	28	3.4	149	0	70
MAY												
01...	1100	6440	12.0	15	120	38	9.0	24	2.8	114	0	63
JUNE												
14...	1130	38600	16.0	13	20	14	4.1	6.0	1.6	67	0	13
JULY												
08...	1530	29000	17.5	11	50	18	5.3	8.0	1.7	67	0	21
AUG.												
06...	1540	9210	—	13	20	28	8.1	16	2.5	103	—	42
SEP.												
09...	1500	5040	18.0	13	60	36	13	33	3.1	143	2	63

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
11...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NOV.												
08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JAN.												
14...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FEB.												
08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAR.												
01...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
APR.												
11...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAY												
01...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JUNE												
14...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JULY												
08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AUG.												
06...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—
SEP.												
09...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—

06214500 YELLOWSTONE RIVER AT BILLINGS, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED URANIUM (U) (UG/L)	DISSOLVED RA-226 (RADON METHOD) (PC/L)	DISSOLVED GROSS ALPHA AS U-NAT. (UG/L)	DISSOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DISSOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILTRABLE RESIDUE (MG/L)	SUSPENDED GROSS ALPHA AS U-NAT. (UG/L)	SUSPENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUSPENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NONFILTRABLE RESIDUE (MG/L)
NOV.												
27...	1525	3090	1.8	.05	4.8	4.2	5.0	290	4.7	3.3	4.1	110
JUNE												
14...	1130	38600	.21	.04	<1.1	2.8	3.6	100	17	13	15	390
19...	1440	67000	.16	.04	2.0	3.1	4.0	96	13	14	17	430

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368	411	409	485	498	472	398	294	179	---	256	347
2	373	413	404	502	513	472	398	294	199	137	244	347
3	379	413	403	526	483	472	398	294	187	143	246	348
4	379	409	409	601	457	472	400	272	173	133	246	346
5	383	444	409	627	455	472	407	270	155	168	261	346
6	388	444	431	633	455	473	407	265	147	143	246	347
7	394	445	439	654	460	477	407	268	155	183	254	348
8	394	438	424	613	470	467	407	243	164	150	260	352
9	399	414	416	624	470	464	404	232	201	187	262	352
10	437	403	420	569	462	472	398	225	248	157	267	356
11	437	403	419	557	454	478	398	232	203	157	264	360
12	414	432	425	536	449	478	407	250	203	164	284	388
13	414	425	418	510	449	472	412	231	192	166	312	384
14	410	408	418	488	449	472	492	247	192	187	284	379
15	403	386	418	468	456	463	470	249	167	176	312	374
16	403	386	416	468	443	463	443	249	184	166	314	367
17	403	386	419	398	443	463	430	267	184	175	312	369
18	403	393	419	369	452	451	414	274	163	206	309	369
19	397	393	415	363	470	410	424	296	156	183	309	374
20	397	392	428	397	462	367	392	300	174	212	309	374
21	405	392	438	418	462	390	361	361	140	189	346	376
22	405	398	426	447	471	410	325	329	160	187	345	379
23	412	408	426	461	471	416	325	296	163	194	339	394
24	412	414	436	467	471	444	337	297	155	228	331	395
25	412	414	436	459	483	443	323	297	139	212	329	393
26	412	426	436	451	483	448	323	293	138	214	330	402
27	412	431	448	442	474	448	316	249	130	212	329	391
28	416	431	467	461	461	435	279	213	138	214	329	403
29	416	413	467	461	---	423	261	186	148	221	326	403
30	421	414	467	459	---	401	261	186	146	[illegible]	326	405
31	421	---	458	460	---	398	---	186	---	[illegible]	330	---
MONTH	404	413	428	496	465	448	381	263	170	186	297	372
YEAR	MAX	654	MIN	130	MEAN	360						

06214500 YELLOWSTONE RIVER AT BILLINGS, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	16.5	15.0	4.5	3.0	1.5	0.5	0.0	0.0	2.0	0.0	6.0	4.0
2	15.5	14.0	4.5	2.0	1.5	1.5	1.0	0.0	0.0	0.0	6.0	5.5
3	14.0	12.0	2.0	0.5	1.5	0.5	1.5	0.0	0.5	0.0	6.0	4.5
4	13.0	11.0	1.0	0.0	1.0	0.0	2.0	1.0	0.5	0.0	4.5	3.0
5	12.0	10.5	0.0	0.0	0.5	0.0	1.5	0.5	0.0	0.0	4.5	3.5
6	13.0	10.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	4.5	3.5
7	14.0	12.0	0.0	0.0	1.0	0.0	1.5	0.0	0.0	0.0	4.0	2.0
8	13.5	10.5	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	3.5	2.0
9	10.5	9.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	4.0	1.5
10	---	---	1.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	5.0	3.0
11	---	---	3.0	1.0	1.5	0.0	1.5	0.0	2.0	1.0	5.5	3.0
12	9.0	8.0	4.5	3.0	2.0	1.0	1.0	0.0	1.5	1.0	6.0	4.5
13	10.5	8.5	5.0	4.5	1.5	1.0	0.0	0.0	2.0	1.0	5.5	4.0
14	12.0	10.0	5.0	4.0	1.5	0.0	0.0	0.0	2.0	1.0	5.0	4.0
15	12.0	10.5	4.0	3.5	0.5	0.0	1.0	0.0	3.0	1.0	4.5	3.5
16	11.5	10.0	4.0	3.5	2.0	0.5	0.5	0.5	3.0	1.5	5.5	3.5
17	12.0	10.5	4.0	4.0	3.0	2.0	0.5	0.5	3.5	1.5	8.5	5.5
18	12.0	11.0	4.0	3.5	3.0	0.5	1.0	0.5	3.5	2.0	8.5	7.0
19	12.0	10.5	3.5	3.0	1.0	0.0	1.0	0.5	4.0	3.5	7.0	3.0
20	11.5	10.5	3.0	0.5	0.0	0.0	1.0	1.0	4.0	3.5	4.0	3.0
21	11.0	10.0	2.0	0.0	0.0	0.0	1.0	0.5	4.0	2.0	3.0	1.0
22	11.0	9.5	1.0	0.0	1.0	0.0	1.0	1.0	3.5	2.0	3.0	1.0
23	11.0	9.5	0.0	0.0	1.5	0.5	1.0	1.0	2.0	1.5	3.5	1.5
24	10.5	9.5	0.0	0.0	2.0	1.0	1.0	1.0	2.0	1.0	3.5	2.0
25	9.5	8.5	0.0	0.0	1.5	0.5	1.0	1.0	2.0	1.0	6.0	3.5
26	8.5	7.0	0.0	0.0	0.5	0.0	1.5	1.0	3.5	1.5	9.0	5.5
27	7.0	6.0	0.0	0.0	0.0	0.0	1.5	1.0	3.5	3.0	11.5	8.5
28	8.5	6.0	1.0	0.0	0.0	0.0	1.5	1.0	4.0	2.0	10.5	8.0
29	8.5	7.0	1.5	0.0	0.5	0.0	1.0	1.0	---	---	8.5	7.5
30	7.0	6.0	1.0	0.0	2.0	0.0	1.5	1.0	---	---	8.0	6.5
31	6.5	3.5	---	---	0.0	0.0	1.0	1.0	---	---	9.0	6.5
MONTH	16.5	3.5	5.0	0.0	3.0	0.0	2.0	0.0	4.0	0.0	11.5	1.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	8.5	6.0	16.5	11.0	---	---	16.5	15.5	21.0	18.5	---	---
2	8.0	6.5	15.5	12.0	---	---	15.5	14.0	21.0	18.5	---	---
3	7.5	6.0	14.5	11.5	15.0	14.0	15.0	12.5	20.5	18.0	---	---
4	8.5	6.0	15.0	12.5	14.0	12.0	14.5	14.5	21.5	18.0	---	---
5	9.0	6.5	16.0	13.0	12.0	10.0	17.0	16.5	21.5	18.5	18.0	15.5
6	9.0	7.5	15.5	13.5	11.0	9.0	17.0	15.5	22.0	19.5	18.5	15.5
7	9.0	7.5	14.5	11.5	10.0	9.0	17.5	15.5	20.5	18.5	18.5	16.0
8	10.0	7.0	13.0	11.5	10.0	8.5	18.5	15.5	19.0	17.5	18.0	15.5
9	11.0	8.0	12.5	10.5	13.0	9.5	18.5	16.5	17.5	15.5	18.5	15.5
10	10.5	8.0	12.0	10.5	14.0	12.0	18.5	16.5	17.5	15.0	18.0	16.0
11	9.0	7.0	12.0	8.5	15.5	12.5	18.5	16.5	18.0	16.0	15.5	12.5
12	8.5	7.5	11.0	9.5	16.5	14.0	19.0	16.0	18.5	16.0	12.5	10.5
13	7.5	6.0	10.0	6.0	16.0	14.0	19.0	16.5	19.0	16.5	12.5	9.5
14	8.5	5.5	9.0	5.5	15.5	13.5	20.0	17.0	18.0	16.0	13.5	10.5
15	11.0	6.5	8.5	7.0	15.0	12.5	20.5	18.5	17.5	15.0	15.0	12.0
16	12.5	8.5	11.0	7.0	14.5	13.0	20.5	19.0	18.5	15.5	16.5	13.5
17	13.5	10.5	9.5	7.5	14.5	12.5	21.5	19.5	20.0	16.5	17.0	14.0
18	14.5	10.5	9.0	7.5	15.0	13.0	20.5	19.0	20.5	17.0	17.0	14.5
19	15.0	12.0	9.5	8.0	14.5	13.0	20.5	18.0	20.0	18.0	16.0	14.5
20	14.0	12.0	9.0	7.5	15.0	13.0	21.5	19.0	19.0	17.5	15.5	13.5
21	12.0	9.5	---	---	14.0	13.0	21.5	19.0	---	---	15.0	12.5
22	13.0	8.5	---	---	15.0	13.0	21.5	19.5	---	---	15.0	12.0
23	14.0	11.0	---	---	17.0	13.5	21.5	19.0	---	---	14.5	12.0
24	15.5	11.5	---	---	18.0	15.0	21.5	18.5	---	---	15.0	12.5
25	16.5	13.0	---	---	18.0	15.5	22.0	19.5	---	---	15.0	12.5
26	15.5	13.5	---	---	16.5	14.0	21.5	19.5	---	---	15.0	13.0
27	13.5	11.5	---	---	16.0	14.0	22.0	19.0	---	---	14.0	11.0
28	11.0	9.0	---	---	18.0	16.0	21.5	19.0	---	---	12.5	10.5
29	8.0	7.0	---	---	18.0	16.5	22.0	19.0	---	---	12.0	11.0
30	13.5	10.0	---	---	17.0	16.5	22.0	20.0	---	---	12.0	9.5
31	---	---	---	---	---	---	21.5	19.0	---	---	---	---
MONTH	16.5	5.5	---	---	18.0	8.5	22.0	12.5	---	---	18.5	9.5
YEAR	22.0	0.0										

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT.

LOCATION.--Lat 46°54'15", long 108°19'01", in N½SW¼ sec.24, T.2 N., R.27 E., Yellowstone County, at bridge on State Highway 312 (revised), 0.1 mi (0.2 km) downstream from Twelve Mile Creek, and 0.7 mi (1.1 km) northwest of Huntley.

DRAINAGE AREA.--12,840 mi² (33,256 km²).

PERIOD OF RECORD.--Chemical analyses: October 1950 to September 1952, July 1972 to September 1974.

REMARKS.--Miscellaneous sample of chemical data published for water year 1971. Records of discharge are estimated from Yellowstone River at Billings, Mt. (station 06214500). Flow affected by diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (M3/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.											
30...	1100	3800	--	43	16	33	--	--	--	96	6.8
DEC.											
20...	0930	3070	--	46	16	32	--	--	--	100	8.5
FEB.											
14...	0930	2820	14	43	16	33	4.3	169	0	100	7.7
MAR.											
04...	0930	2790	11	44	17	35	3.8	170	0	110	9.7
20...	1000	4400	--	--	--	--	--	--	--	--	--
29...	1000	3710	10	42	14	31	4.1	164	0	91	8.1
APR.											
16...	1200	3760	--	--	--	--	--	--	--	--	--
29...	0930	8530	--	--	--	--	--	--	--	--	--
MAY											
13...	0930	8740	--	--	--	--	--	--	--	--	--
23...	1500	6700	--	--	--	--	--	--	--	--	--
JUNE											
13...	0945	28100	--	--	--	--	--	--	--	--	--
20...	1500	63300	14	18	3.6	6.8	2.1	69	--	13	2.3
JULY											
11...	1130	26200	--	--	--	--	--	--	--	--	--
30...	1100	11000	--	--	--	--	--	--	--	--	--
AUG.											
08...	1420	9420	--	--	--	--	--	--	--	--	--
22...	1145	7670	--	--	--	--	--	--	--	--	--
23...	0900	7230	--	--	--	--	--	--	--	--	--
SEP.											
04...	0950	5770	--	--	--	--	--	--	--	--	--
19...	0900	4700	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER DAY)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	OIL AND GREASE (MG/L)	SUSPENDED SOLIDS (MG/L)	TURBIDITY (JTU)
OCT.											
30...	292	--	3000	.40	170	--	1.1	--	--	--	--
DEC.											
20...	299	--	2480	.41	180	--	1.0	--	--	--	--
FEB.											
14...	--	301	2290	.41	170	35	1.1	14	--	82	20
MAR.											
04...	--	314	2370	.43	180	40	1.1	20	0	10	1
20...	260	--	3090	.35	--	--	--	56	0	190	90
29...	290	281	2910	.39	160	28	1.1	24	7	116	50
APR.											
16...	332	--	3370	.45	--	--	--	16	1	284	70
29...	163	--	3750	.22	--	--	--	27	--	175	60
MAY											
13...	158	--	3730	.21	--	--	--	19	--	38	30
23...	206	--	3730	.28	--	--	--	24	0	245	90
JUNE											
13...	101	--	7660	.14	--	--	--	18	0	333	50
20...	89	94	15200	.12	60	3	.4	60	0	514	100
JULY											
11...	96	--	6790	.13	--	--	--	23	0	89	20
30...	140	--	4160	.19	--	--	--	9	0	81	7
AUG.											
08...	166	--	4220	.23	--	--	--	8	--	80	5
22...	229	--	4740	.31	--	--	--	12	--	190	80
23...	--	--	--	--	--	--	--	--	0	--	--
SEP.											
04...	226	--	3520	.31	--	--	--	11	3	14	6
19...	239	--	3030	.33	--	--	--	6	0	6	0

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TOTAL NITRO-GEN (N) (MG/L)	ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT.												
30...	1100	--	--	--	--	--	--	--	--	--	2.5	--
DEC.												
20...	0930	.84	--	--	.59	.25	.22	.07	.04	.06	2.0	--
FEB.												
14...	0930	1.1	.74	.10	.84	.26	--	.13	--	--	--	4.1
MAR.												
04...	0930	.76	.45	.16	.61	.15	--	.09	--	--	--	7.3
20...	1000	2.1	1.1	.58	1.7	.42	--	.29	--	--	7.0	16
29...	1000	.96	.65	.16	.81	.15	--	.15	--	--	3.8	5.8
APR.												
16...	1200	.78	.38	.26	.64	.14	--	.18	--	--	--	7.2
29...	0930	1.5	.89	.31	1.2	.26	--	.23	--	--	2.5	--
MAY												
13...	0930	.66	.54	.12	.66	.00	--	.14	--	--	--	6.7
23...	1500	1.0	.81	.12	.93	.08	--	.19	--	--	2.2	10
JUNE												
13...	0945	.94	.85	.06	.91	.03	--	.32	--	--	1.1	7.1
20...	1500	1.2	.90	.20	1.1	.08	--	.54	--	--	2.7	7.1
JULY												
11...	1130	1.3	1.1	.13	1.2	.09	--	.14	--	--	1.0	3.1
30...	1100	.50	.39	.06	.45	.05	--	.07	--	--	--	2.5
AUG.												
08...	1420	.58	.33	.16	.49	.09	--	.08	--	--	1.7	2.2
22...	1145	.74	.30	.13	.43	.31	--	.17	--	--	2.3	6.6
SEP.												
04...	0950	.75	.55	.12	.67	.08	--	.06	--	--	1.4	3.1
19...	0900	.50	.32	.09	.41	.09	--	.04	--	--	2.1	2.8

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
MAR.									
29...	1000	--	10	3600	<100	110	--	2	90
APR.									
29...	0930	9	30	4900	<100	180	--	3	110
MAY									
23...	1500	11	50	6900	<100	180	--	2	70
JUNE									
20...	1500	22	40	12000	<100	350	.0	2	80

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS SOLVD OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)
OCT.										
30...	1100	8.0	14.0	470	11.8	111	8.5	119	1600	750
DEC.										
20...	0930	1.0	1.0	482	13.4	102	7.7	128	2500	1200
FEB.										
14...	0930	1.0	3.0	508	13.0	94	7.3	139	480	220
MAR.										
04...	0930	2.0	3.0	517	11.4	92	8.4	139	210	120
20...	1000	2.0	-7.0	411	11.6	85	7.7	--	--	500
29...	1000	8.0	16.5	409	[illegible]	89	7.7	135	460	460
APR.										
16...	1200	13.0	22.0	523	[illegible]	105	8.5	--	830	440
29...	0930	9.5	11.5	269	[illegible]	103	7.9	--	290	150
MAY										
13...	0930	10.0	8.0	270	[illegible]	93	7.7	--	190	260
23...	1500	14.5	23.0	320	[illegible]	106	8.1	--	9600	960
JUNE										
13...	0945	16.5	20.5	175	[illegible]	98	7.7	--	--	--
20...	1500	16.5	33.0	165	[illegible]	99	7.8	57	6600	2400
JULY										
11...	1130	17.5	26.5	165	[illegible]	97	8.0	--	2600	1200
30...	1100	21.0	30.0	280	[illegible]	94	7.3	--	5600	530
AUG.										
08...	1420	18.0	19.0	290	[illegible]	98	7.8	--	6300	580
22...	1145	18.0	25.5	380	[illegible]	99	8.2	--	21000	610
SEP.										
04...	0950	15.0	17.0	425	[illegible]	97	7.8	--	23000	960
19...	0900	15.0	11.5	405	[illegible]	89	7.9	--	7000	190

06217750 FLY CREEK AT POMPEYS PILLAR, MT.

LOCATION.--Lat 45°59'33", long 107°57'07", in NW¼SE¼ sec.23, T.3 N., R.30 E., Yellowstone County, at gaging station at county bridge at Pompeys Pillar, 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--285 mi² (738 km²).

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1974.
Water temperatures: October 1968 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 2,230 mg/l Dec. 23-31; minimum, 506 mg/l Aug. 15-31.
Hardness: Maximum, 730 mg/l Mar. 16-31; minimum, 240 mg/l May 1-15, June 1-18.
Specific conductance: Maximum daily, 3,530 micromhos May 7; minimum daily, 386 micromhos May 12.
Water temperatures: Maximum, 23.5°C June 24, 25.
Period of record:
Dissolved solids: Maximum, 2,370 mg/l Apr. 15-27, 1969; minimum, 232 mg/l Feb. 12-19, 1971.
Hardness: Maximum, 802 mg/l Apr. 15-27, 1969; minimum, 110 mg/l Feb. 12-19, 1971.
Specific conductance: Maximum daily, 3,700 micromhos Apr. 30, 1969; minimum daily, 262 micromhos Feb. 14, 1971.
Water temperatures: Maximum, 23.5°C June 24, 25, 1974; minimum, freezing point on many days during winter periods most years.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Hardness, 230 mg/l June 5. Once-daily temperatures erroneous and not published from October to April. Flow affected by diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-16	--	10	--	15	10	120	87	280	5.1	430	0	890
NOV.												
01-08	--	11	--	16	10	82	72	250	5.0	458	0	650
09-30	--	10	--	16	10	97	82	300	4.9	452	0	800
DEC.												
01-22	--	10	--	14	10	110	81	340	5.3	426	0	950
23-31	--	10	--	13	10	130	120	410	5.9	439	0	1300
JAN.												
01-31	--	14	--	12	20	83	64	240	7.0	317	0	700
FEB.												
01-14	--	11	--	13	10	100	84	310	5.7	347	0	930
15-28	--	9.6	--	12	20	89	84	310	4.6	393	0	880
MAR.												
01-15	--	8.0	--	11	20	98	100	390	4.9	389	0	1100
16-31	--	7.4	--	11	10	110	110	390	4.9	415	0	1200
APR.												
01-15	--	7.3	--	11	10	95	110	400	6.8	395	0	1100
16-30	--	6.6	--	10	20	94	100	440	6.7	346	0	1300
MAY												
01-15	--	35	--	16	10	47	29	94	3.6	164	0	290
16-31	--	56	--	15	10	60	37	120	4.1	186	0	380
JUNE												
01-18	--	87	--	14	30	50	29	100	3.8	167	0	300
19-30	--	34	--	12	40	90	60	160	5.0	257	0	560
JULY												
01-15	--	38	--	12	20	68	38	130	3.1	183	--	410
16-31	--	25	--	14	70	94	56	160	5.1	277	--	560
AUG.												
01-14	--	25	--	14	10	84	49	130	4.4	264	--	470
15-31	--	72	--	14	10	55	28	60	4.3	202	--	230
SEP.												
01-16	--	72	--	13	10	63	31	82	1.5	217	--	270
17-30	--	51	--	12	10	79	46	130	1.6	253	3	410
WTD. AVG.	--	--	--	14	18	70	46	149	3.9	242	0	480
TIME WTD. AVG.	--	28	--	13	17	85	67	236	4.8	316	0	705
TOT. LOAD (TONS)	--	--	--	356	0	1850	1210	3920	103	6380	6	12100

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
DEC.												
04...	1255	9.2	2.5	16	10	130	100	400	5.6	671	0	1100
MAR.												
05...	1000	8.0	2.5	9.7	30	120	100	380	5.8	292	0	1300
JUNE												
05...	1000	77	15.0	13	40	49	27	82	2.9	145	0	270
SEP.												
24...	1351	45	13.5	12	80	88	48	130	4.4	280	--	420

06217750 FLY CREEK AT POMPEYS PILLAR, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-16	14	.6	.22	.04	1620	2.20	43.7	660	310	4.8	2120	8.0
NOV.												
01-08	14	.5	.48	.04	1320	1.80	39.2	500	130	4.9	1850	8.1
09-30	17	.5	.55	.04	1540	2.09	41.6	580	210	5.4	2180	8.1
DEC.												
01-22	21	.5	.32	.01	1730	2.35	46.7	610	260	6.0	2450	8.1
23-31	29	.4	.27	.01	2230	3.03	60.2	820	460	6.2	2880	8.1
JAN.												
01-31	15	.4	.37	.03	1280	1.74	48.4	470	210	4.8	1800	8.0
FEB.												
01-14	20	.4	.23	.03	1640	2.23	48.7	600	310	5.5	2260	8.1
15-28	18	.4	.19	.02	1590	2.16	41.2	570	250	5.7	2180	8.2
MAR.												
01-15	24	.4	.04	.01	1920	2.61	41.5	660	340	6.6	2500	8.1
16-31	26	.4	.02	.01	2060	2.80	41.2	730	390	6.3	2790	8.1
APR.												
01-15	29	.5	.03	.01	1950	2.65	38.4	690	370	6.6	2740	8.3
16-30	30	.4	.00	.00	2150	2.92	38.3	650	360	7.5	2940	8.2
MAY												
01-15	8.9	.3	.00	.00	570	.78	53.9	240	100	2.7	868	7.8
16-31	11	.3	.00	.00	719	.98	109	300	150	3.0	1090	8.0
JUNE												
01-18	9.1	.3	.00	.01	589	.80	138	240	110	2.8	935	7.8
19-30	11	.4	.00	.01	1030	1.40	94.6	470	260	3.2	1460	8.2
JULY												
01-15	10	.3	.01	.01	758	1.03	77.6	310	160	3.2	1140	--
16-31	9.7	.4	.01	.03	1040	1.41	70.2	470	240	3.2	1500	--
AUG.												
01-14	9.0	.5	.00	.02	891	1.21	60.1	410	200	2.8	1300	--
15-31	6.7	.4	.00	.02	506	.69	98.4	250	87	1.9	789	--
SEP.												
01-16	7.0	.5	.03	.00	575	.78	112	290	110	2.1	878	--
17-30	9.4	.5	.01	.01	816	1.11	112	390	170	2.9	1220	--
WTD. AVG.	11	.4	.06	.01	874	1.19	--	364	166	3.2	1280	--
TIME WTD. AVG.	16	.4	.14	.02	1280	1.75	--	490	231	4.5	1800	--
TOT. LOAD (TONS)	290	10	1.6	.33	23800	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
DEC.												
04...	22	.5	.30	.02	2010	2.73	49.7	740	350	6.4	2500	8.1
MAR.												
05...	27	.5	.15	.01	1990	2.71	41.6	710	470	6.2	2700	8.2
JUNE												
05...	6.3	.2	.23	.01	523	.71	109	230	110	2.3	803	7.8
SEP.												
24...	9.8	.5	.03	.01	859	1.17	104	410	180	2.8	1320	--

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L)
OCT.			
03...	1620	11	.02
NOV.			
06...	1000	11	.05
DEC.			
04...	1700	9.2	.04
JAN.			
08...	0930	6.3	.01
FEB.			
06...	0900	12	.03
MAR.			
05...	1000	8.0	.02
APR.			
11...	1200	7.5	.00
MAY			
16...	1010	5.8	.04
JUNE			
05...	1400	77	.06
JULY			
17...	1300	27	.06
AUG.			
19...	1035	56	.03
SEP.			
24...	1355	45	.03

06217750 FLY CREEK AT POMPEYS PILLAR, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2140	2670	1750	1370	1820	2570	2730	2920	831	1460	1330	751
2	2170	1670	26[illegible]0	[illegible]10	2200	2590	2980	2830	829	1320	1450	751
3	2140	1780	2660	3100	2540	2190	2980	2040	746	1320	1450	765
4	2170	2540	2640	3260	2330	2640	2890	2270	800	860	1480	765
5	2170	1690	2750	3230	1620	2730	2980	2700	786	624	1500	758
6	2170	1470	2030	3130	2370	2570	3010	2360	746	683	1260	953
7	2190	1500	1980	2100	2790	1630	3010	3530	879	613	1330	778
8	2000	1500	2810	1310	2620	2290	2680	539	879	707	1070	815
9	---	2420	2810	2650	2500	2790	2950	478	1210	1650	1070	840
10	2150	2170	2460	2580	1970	2770	2590	511	951	1800	1230	1080
11	2190	2000	2880	1830	1940	2600	2660	1190	1100	1620	1230	1090
12	2170	1440	2620	1250	1850	2060	3010	386	1160	1130	1230	945
13	2030	1890	2810	2920	2210	2600	3100	911	1140	1460	1290	926
14	2190	2420	2880	2500	2230	2770	2950	923	818	1600	1230	908
15	2170	2500	2910	2630	2240	2670	2710	817	728	1330	935	906
16	2190	2600	2280	542	1660	2440	2950	1240	707	1490	830	988
17	---	1590	1410	1170	2090	2210	2730	1240	818	1460	749	1220
18	---	2040	2660	1250	1730	2950	2110	1240	895	1450	755	1420
19	---	1440	2860	1510	2400	3070	3100	1250	1030	1230	755	1360
20	---	2720	2560	1670	2580	2770	2500	1510	1260	1330	714	1250
21	---	2770	2170	1700	2230	2740	2570	1510	1270	1360	741	1120
22	---	1880	1840	1850	2400	2180	2950	1190	970	1360	790	1110
23	---	1670	2830	1850	2400	2770	2010	941	1450	1500	790	1120
24	---	2170	2660	1980	1850	3070	2710	1100	1450	1620	741	1260
25	---	2630	2650	1940	2210	2790	2730	897	1780	1660	746	1310
26	---	2270	3150	2050	2200	2330	2060	839	1800	1690	774	1120
27	---	2650	3060	2160	2580	2920	2950	1060	1800	1800	723	1050
28	---	1510	3150	2240	1810	2840	2710	861	1810	1800	802	990
29	2510	1780	2860	2220	---	2820	2950	839	1810	1490	894	1120
30	2530	2160	2650	2220	---	3070	2980	899	1440	1790	914	1270
31	2570	---	2840	2410	---	2580	---	914	---	1330	776	---
MONTH	---	2050	2590	2100	2190	2610	2770	1350	1130	1370	1020	1020
YEAR	MAX	3530	MIN	386	MEAN	1860						

TEMPERATURE (DEG. C) OF WATER . WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	15.5	12.5	21.5	20.5	16.5
2	---	---	---	---	---	---	---	14.0	12.0	18.5	20.0	17.0
3	---	---	---	---	---	---	---	19.0	19.5	18.0	17.0	17.0
4	---	---	---	---	---	---	---	14.5	16.0	15.5	17.5	18.0
5	---	---	---	---	---	---	---	11.5	15.0	17.0	21.5	19.0
6	---	---	---	---	---	---	---	16.0	15.5	19.5	22.0	19.0
7	---	---	---	---	---	---	---	15.0	12.5	17.5	18.5	17.0
8	---	---	---	---	---	---	---	16.0	12.0	20.0	18.5	14.5
9	---	---	---	---	---	---	---	14.5	12.0	22.5	18.5	19.5
10	---	---	---	---	---	---	---	13.0	15.0	23.0	18.0	18.0
11	---	---	---	---	---	---	---	12.0	17.0	21.0	15.5	16.0
12	---	---	---	---	---	---	---	13.0	18.0	23.0	19.5	16.0
13	---	---	---	---	---	---	---	8.5	19.0	21.0	19.5	16.0
14	---	---	---	---	---	---	---	9.5	19.0	19.0	17.5	13.5
15	---	---	---	---	---	---	---	9.5	19.0	20.0	19.0	12.0
16	---	---	---	---	---	---	---	10.0	16.0	21.5	20.0	17.5
17	---	---	---	---	---	---	---	9.5	22.0	20.0	17.5	17.5
18	---	---	---	---	---	---	---	10.0	22.0	22.0	18.0	17.5
19	---	---	---	---	---	---	---	10.5	23.0	22.0	22.0	15.0
20	---	---	---	---	---	---	---	9.0	20.0	21.5	16.5	16.0
21	---	---	---	---	---	---	---	9.0	18.5	19.5	19.5	16.5
22	---	---	---	---	---	---	---	11.0	18.0	22.0	21.0	12.5
23	---	---	---	---	---	---	---	12.5	22.0	23.0	21.5	15.0
24	---	---	---	---	---	---	---	16.0	25.0	23.0	20.0	15.0
25	---	---	---	---	---	---	---	17.5	25.0	22.5	17.5	15.5
26	---	---	---	---	---	---	---	15.5	20.5	22.5	21.0	15.0
27	---	---	---	---	---	---	---	16.5	20.5	20.5	21.0	16.0
28	---	---	---	---	---	---	---	14.0	20.0	17.0	18.5	12.5
29	---	---	---	---	---	---	---	13.0	20.0	20.0	18.0	11.5
30	---	---	---	---	---	---	---	12.5	17.0	20.0	17.0	12.5
31	---	---	---	---	---	---	---	11.0	---	22.0	17.5	---
MONTH	---	---	---	---	---	---	---	13.0	19.0	21.0	19.0	15.5
YEAR	MAX	25.5	MIN	8.5	MEAN	17.0						

06279500 BIGHORN RIVER AT KANE, WYO.

LOCATION.--Lat 44°45'31", long 108°10'51", in NW¼NE¼SW¼ sec.9, T.55 N., R.94 W., Big Horn County, sampled at Magcobar Corp. bridge 24.5 mi (39.4 km) upstream from gaging station.

DRAINAGE AREA.--15,765 mi² (40,831 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: March to August 1947 (monthly), June 1948 to July 1949 (monthly), December 1949 to September 1953 (monthly), June to August 1955 (monthly), October 1955 to September 1957 (daily), December 1960 to September 1974 (daily).
Water temperatures: July to September 1949, October 1950 to September 1974 (at sampling site).
Sediment records: March 1946 to September 1964 (daily), December 1969 to September 1974 (monthly).

EXTREMES.--1973-74:
Specific conductance: Maximum daily observed, 1,080 micromhos Nov. 14, Mar. 21; minimum daily, 351 micromhos June 17.
Water temperatures: Maximum observed, 23.5°C July 18; minimum, freezing point on many days during January and February.

Period of record:
Specific conductance (1955-57, 1960-74): Maximum daily, 3,030 micromhos July 7, 1961; minimum daily, 351 micromhos June 17, 1974.
Water temperatures: Maximum, 29.0°C July 14, 30, 1953, July 12, 1954; minimum, freezing point on many days during winter periods.

REMARKS.--Temperature recorder at gaging station 24.5 mi (39.4 km) downstream from sampling site; discontinued September 1974. Recorded water temperatures: Maximum, 23.5°C on several days in July; minimum, freezing point on many days during December to February. No thermograph record due to clock stoppage Feb. 22 to Mar. 19; range in temperature 5.0°C to 0.0°C. No appreciable inflow between sampling point and gaging station except during periods of intense local precipitation. Stream frozen Dec. 4-13, Dec. 15 to Feb. 26.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
OCT.												
01...	1245	3430	10	71	23	75	3.5	191	0	260	12	.5
10...	1025	3150	10	74	28	79	3.3	195	0	290	11	.5
31...	1400	2960	11	72	26	81	3.3	174	0	290	14	.4
DEC.												
03...	1515	2750	9.3	75	25	78	3.5	196	0	290	11	.5
JAN.												
14...	1600	A1750	11	67	43	82	4.2	237	0	310	19	.5
FEB.												
19...	1500	A2600	10	87	16	79	3.5	201	0	260	14	.4
MAR.												
20...	0800	A2200	8.8	87	19	79	3.5	203	0	280	15	.7
APR.												
23...	0800	2780	9.7	74	29	87	3.3	210	0	300	15	.5
MAY												
20...	1145	2360	11	88	32	82	3.0	207	6	310	14	.4
JUNE												
20...	1630	7590	9.1	45	4.1	31	2.1	110	0	100	3.6	.3
JULY												
24...	1630	2470	10	66	23	70	3.0	186	0	240	9.1	.4
AUG.												
19...	1430	2110	9.0	67	26	74	3.0	190	0	260	9.1	.5
SEP.												
19...	1430	1430	7.6	81	33	89	3.3	210	3	330	11	.5

A Daily mean discharge

DATE	DISSOLVED NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TURBIDITY (JTU)	FECAL COLIFORM (COL. PER 100 ML)	TEMPERATURE (DEG C)
OCT.												
01...	--	.23	550	.75	5090	270	2.0	856	8.2	--	--	14.5
10...	.16	--	593	.81	5040	300	2.0	940	8.5	20	--	7.5
31...	.14	.08	587	.80	4690	290	2.1	920	6.5	15	70	7.0
DEC.												
03...	.09	.01	586	.80	4350	290	2.0	897	8.1	--	--	2.0
JAN.												
14...	.16	.00	656	.89	3100	350	1.9	992	8.0	2	100	.5
FEB.												
19...	.25	.05	572	.78	4020	280	2.0	888	7.9	75	120	.5
MAR.												
20...	.18	.02	595	.81	3530	300	2.0	892	8.2	25	813	1.0
APR.												
23...	.68	.01	629	.86	4720	300	2.2	918	8.1	250	370	10.0
MAY												
20...	.41	.00	650	.88	4140	350	1.9	978	8.4	65	390	11.0
JUNE												
20...	.18	.01	250	.34	5120	130	1.2	395	8.0	--	31000	19.5
JULY												
24...	.47	.01	515	.70	3430	260	1.9	788	8.2	90	420	23.0
AUG.												
19...	.41	.01	543	.74	3090	280	1.9	814	8.1	10	77	20.0
SEP.												
19...	.23	.00	663	.90	2560	340	2.1	954	8.4	1	820	13.5

B Non-ideal counting condition

06279500 BIGHORN RIVER AT KANE WYO.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	838	865	708	---	---	951	956	858	715	646	804	845
2	836	876	800	---	---	922	981	952	795	595	833	853
3	864	863	892	---	---	940	897	892	725	642	810	845
4	875	882	857	---	---	960	946	880	665	652	793	871
5	875	881	967	---	---	953	948	881	572	696	837	914
6	875	880	1030	---	---	998	897	933	565	628	781	862
7	875	886	1030	---	---	983	934	932	651	626	807	1010
8	870	889	1020	---	---	995	938	915	737	649	870	1030
9	877	884	1030	---	---	1010	936	855	857	628	850	1040
10	850	909	1030	---	---	1020	937	807	867	664	870	1020
11	875	909	1040	---	---	1020	947	805	776	738	842	1000
12	893	912	1040	---	---	948	939	840	737	789	823	1020
13	883	915	1030	---	---	989	983	901	600	790	811	1010
14	883	1080	1050	---	---	1010	1020	945	507	798	816	1000
15	870	1070	1010	---	---	980	986	921	458	818	848	1020
16	858	1040	1020	---	---	952	1040	964	435	797	813	977
17	860	1040	1030	---	---	991	948	1000	351	809	831	992
18	876	1060	972	---	---	995	1020	1020	377	823	813	978
19	872	1060	1030	---	---	980	1020	1030	554	778	818	985
20	870	1050	1040	---	---	1040	1020	1020	488	825	823	981
21	873	1060	1050	---	---	1080	1010	917	467	846	816	971
22	874	1060	1020	---	---	1060	993	858	486	824	829	962
23	855	1060	1010	---	956	1040	971	911	627	743	840	958
24	872	987	1020	---	953	1020	916	959	600	761	816	964
25	867	1020	1010	---	929	995	990	971	600	774	826	960
26	862	1040	1020	---	940	991	953	898	558	758	830	955
27	863	1050	1040	---	956	1020	836	688	569	802	828	944
28	868	1040	1010	---	954	993	756	580	581	808	822	946
29	871	954	1050	---	---	997	735	519	585	805	828	946
30	870	900	994	---	---	1010	836	552	599	794	818	964
31	867	---	990	---	---	965	---	643	---	806	845	---
MONTH	868	971	995	---	---	994	943	865	603	746	826	961
YEAR	MAX	1080	MIN	351	MEAN	879						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	6.0	4.5	---	---	5.0	8.0	12.0	12.0	20.0	19.5	17.0
2	15.5	4.5	4.0	---	---	4.5	8.0	10.5	14.0	19.0	19.0	18.0
3	12.5	3.5	3.0	---	---	4.0	7.5	10.0	14.5	17.0	18.0	17.0
4	12.5	5.5	3.0	---	---	4.0	7.5	10.5	14.5	17.5	19.0	16.5
5	12.5	6.0	2.0	---	---	4.0	6.0	11.0	14.0	18.5	18.0	16.0
6	12.0	6.0	0.5	---	---	4.0	8.0	13.0	12.0	19.5	20.0	16.0
7	11.5	5.5	0.5	---	---	4.0	7.0	13.0	13.0	19.5	20.0	16.5
8	11.5	5.5	1.0	---	---	4.0	7.0	14.0	11.0	20.0	18.5	17.0
9	9.0	7.0	1.5	---	---	5.0	7.0	14.0	12.0	21.0	18.0	17.0
10	9.5	6.5	1.0	---	---	6.0	9.0	13.0	14.5	22.0	17.0	17.0
11	9.5	7.0	1.5	---	---	7.5	7.0	11.0	15.0	21.0	17.5	14.0
12	9.5	7.5	2.0	---	---	7.5	8.0	11.0	16.0	19.5	18.0	10.0
13	13.0	8.5	3.0	---	---	6.5	5.0	11.0	16.0	20.0	17.0	10.0
14	12.5	6.0	2.0	---	---	5.0	6.5	9.5	16.0	21.5	18.0	11.0
15	12.5	6.0	2.0	---	---	7.0	7.5	10.5	15.0	21.0	17.0	12.0
16	12.0	6.0	2.0	---	---	8.5	8.0	10.0	16.5	22.0	16.0	13.0
17	14.5	7.0	1.5	---	---	9.0	9.0	12.0	15.0	21.5	18.0	14.0
18	15.0	5.5	1.0	---	---	7.0	10.0	11.0	16.0	23.5	19.0	14.5
19	14.0	4.0	0.5	---	---	4.5	11.0	13.5	16.0	22.0	19.0	14.5
20	12.0	3.5	0.5	---	---	4.0	10.0	12.0	17.0	22.0	18.0	14.0
21	13.5	3.5	0.5	---	---	3.5	8.0	10.0	17.0	20.5	18.0	13.0
22	13.5	3.5	0.5	---	---	4.0	8.0	10.0	16.0	20.5	17.0	13.0
23	13.5	3.0	0.5	---	1.0	5.0	10.0	12.0	18.0	21.0	18.0	12.0
24	12.0	1.0	0.5	---	1.0	6.0	11.0	14.0	18.0	20.5	17.0	12.0
25	10.5	2.0	0.5	---	5.5	7.0	12.0	15.0	19.0	21.0	18.0	13.0
26	10.0	3.5	0.5	---	5.0	9.0	13.5	16.0	20.0	20.5	19.0	13.0
27	9.5	0.5	0.5	---	4.5	10.5	12.0	16.0	19.5	20.0	17.0	13.0
28	8.5	2.5	0.5	---	5.0	8.0	10.0	13.5	19.0	22.0	17.0	10.0
29	8.0	2.0	0.5	---	---	8.0	8.0	13.0	19.0	21.0	17.0	11.0
30	8.0	3.0	0.5	---	---	7.0	11.0	10.0	19.5	21.0	18.0	11.0
31	7.5	---	0.5	---	---	8.5	---	10.0	---	20.0	17.0	---
MONTH	11.5	4.5	1.5	---	---	6.0	8.5	12.0	16.0	20.5	18.0	14.0
YEAR	MAX	23.5	MIN	0.5	MEAN	11.0						

06279500 BIGHORN RIVER AT KANE WYO.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	15.0	14.5	7.5	7.0	2.0	1.0	1.0	0.5	1.0	1.0	---	---
2	15.0	14.0	7.0	6.5	2.0	2.0	1.0	1.0	1.0	1.0	---	---
3	14.0	13.0	6.5	6.0	2.0	2.0	1.0	0.5	1.0	1.0	---	---
4	13.0	12.5	6.0	5.5	2.0	1.5	1.0	0.5	1.0	1.0	---	---
5	13.0	12.0	5.5	5.0	2.0	2.0	0.5	0.0	1.0	1.0	---	---
6	12.5	12.0	5.0	4.5	2.0	1.5	0.5	0.0	1.0	1.0	---	---
7	13.0	12.5	4.5	4.5	1.5	1.0	0.5	0.0	1.5	1.0	---	---
8	13.0	12.0	4.5	4.5	1.0	1.0	0.5	0.0	1.5	1.5	---	---
9	12.0	10.5	5.0	4.5	1.0	1.0	0.5	0.0	1.5	1.5	---	---
10	10.5	9.5	5.0	5.0	1.0	1.0	0.0	0.0	1.5	1.0	---	---
11	10.0	10.0	5.5	5.0	1.0	1.0	0.0	0.0	1.5	1.0	---	---
12	10.0	10.0	6.0	5.5	1.0	0.5	0.0	0.0	1.5	1.0	---	---
13	11.0	10.0	6.5	6.0	0.5	0.5	0.0	0.0	1.0	1.0	---	---
14	12.0	11.0	6.5	6.5	0.5	0.5	0.0	0.0	1.0	1.0	---	---
15	12.5	12.0	6.5	6.0	0.5	0.5	0.0	0.0	1.0	1.0	---	---
16	12.5	12.5	6.0	5.5	0.5	0.5	0.0	0.0	1.0	0.5	---	---
17	12.5	12.0	5.5	5.0	0.5	0.5	0.0	0.0	1.0	0.5	---	---
18	12.5	12.0	5.0	5.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
19	12.5	12.0	5.0	4.5	0.5	0.5	1.0	0.0	0.5	0.0	---	---
20	12.5	12.0	4.5	4.0	1.0	0.5	1.0	0.5	0.0	0.0	2.0	2.0
21	12.0	11.5	4.0	3.5	1.0	1.0	1.0	0.5	0.5	0.0	2.0	2.0
22	12.0	11.5	3.5	3.0	1.0	0.5	1.0	1.0	---	---	2.0	1.5
23	12.0	11.5	3.0	2.5	0.5	0.0	1.0	1.0	---	---	2.5	1.5
24	12.0	11.5	2.5	2.5	0.5	0.5	1.0	1.0	---	---	2.5	2.0
25	12.0	11.0	2.5	2.5	0.5	0.0	1.0	1.0	---	---	3.0	2.5
26	11.0	10.0	2.5	2.5	0.5	0.0	1.0	1.0	---	---	4.0	3.0
27	10.5	10.0	2.5	2.0	0.0	0.0	1.0	1.0	---	---	6.0	4.0
28	10.0	9.0	2.0	2.0	0.0	0.0	1.0	1.0	---	---	6.5	6.0
29	9.5	9.0	2.0	0.5	0.5	0.0	1.0	1.0	---	---	6.5	5.5
30	9.0	8.5	1.0	0.5	0.5	0.0	1.0	1.0	---	---	6.5	6.0
31	8.5	7.5	---	---	0.5	0.5	1.0	1.0	---	---	6.5	6.0
MONTH	15.0	7.5	7.5	0.5	2.0	0.0	1.0	0.0	---	---	---	---

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	6.0	6.0	12.0	12.0	14.5	12.5	21.5	21.5	23.0	22.5	18.5	16.5
2	6.0	6.0	12.0	11.5	16.0	14.5	21.5	20.5	23.0	22.0	16.5	15.5
3	6.0	5.5	12.0	11.0	16.5	16.0	20.5	20.0	22.5	21.5	16.5	15.5
4	6.0	5.5	12.5	11.5	16.5	16.0	20.5	20.0	22.5	22.5	17.0	16.0
5	6.5	5.5	14.0	12.0	16.0	15.0	20.5	20.5	23.0	22.0	18.0	17.0
6	7.0	6.5	13.5	13.5	15.0	14.5	20.5	20.5	23.0	22.5	18.5	17.5
7	7.0	7.0	14.0	13.5	14.5	14.0	21.5	20.5	23.0	22.0	18.5	17.0
8	7.5	7.0	14.5	14.0	14.0	13.0	22.5	21.5	22.5	22.0	18.5	17.5
9	8.0	7.5	14.5	14.0	14.0	13.0	22.5	22.0	22.0	21.0	18.5	17.5
10	8.0	7.5	14.0	12.5	15.5	14.0	22.5	22.0	22.0	21.0	18.5	17.0
11	7.5	6.5	12.5	11.5	16.0	15.0	22.0	21.5	22.5	21.0	17.0	13.0
12	7.0	7.0	12.5	11.5	17.5	16.0	21.5	20.5	22.5	21.0	13.0	12.0
13	7.0	6.0	12.5	11.5	18.0	17.5	21.0	21.0	22.5	21.0	12.5	12.0
14	6.5	6.0	11.5	10.5	18.0	17.5	21.5	21.0	22.0	21.5	13.0	12.0
15	7.0	6.0	11.5	11.0	18.0	17.5	21.5	21.5	21.5	20.5	13.5	12.5
16	8.0	7.0	11.5	11.0	18.0	17.5	22.0	21.5	22.0	20.5	14.0	13.0
17	9.5	8.0	11.5	11.5	17.5	17.0	22.5	22.0	23.0	21.5	14.5	13.5
18	10.5	9.5	12.5	11.5	17.5	17.5	22.5	22.0	23.0	21.5	15.0	14.0
19	11.0	10.5	12.5	12.5	18.0	17.5	23.5	22.5	23.0	22.0	15.0	13.5
20	11.0	10.0	12.5	11.0	18.0	17.5	23.5	23.0	22.0	20.0	14.5	13.5
21	10.0	9.5	11.0	10.5	18.0	18.0	23.5	23.0	21.0	19.0	14.0	13.5
22	10.5	9.5	12.0	10.5	18.0	18.0	23.5	23.5	20.5	19.5	14.0	13.5
23	12.0	10.5	14.5	12.0	19.0	18.0	23.5	23.0	21.5	20.0	14.0	13.5
24	13.0	12.0	16.0	14.0	20.0	19.0	23.0	22.5	22.0	21.0	13.5	13.0
25	14.0	13.0	17.0	15.5	21.5	20.0	23.0	23.0	22.5	21.5	14.0	13.0
26	14.0	13.5	17.5	16.5	21.5	21.5	23.0	23.0	22.5	21.0	14.0	13.5
27	13.5	13.0	17.5	16.5	21.5	21.0	23.0	23.0	21.5	20.0	14.0	12.5
28	13.0	12.0	16.5	15.0	21.5	21.0	23.5	23.0	21.0	20.0	12.5	11.5
29	12.0	11.0	15.0	13.0	21.0	21.0	23.5	23.0	21.0	20.0	11.5	11.0
30	12.0	11.0	13.0	11.0	21.5	21.0	23.5	23.0	21.0	19.0	11.5	11.0
31	---	---	12.5	11.5	---	---	23.0	22.5	19.5	18.5	---	---
MONTH	14.0	5.5	17.5	10.5	21.5	12.5	23.5	20.0	23.0	18.5	18.5	11.0
YEAR	23.5	0.0										

06279500 BIGHORN RIVER AT KANE WYO.--Continued

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
DEC.											
03...	1515	2.0	2750	210	1560	--	--	--	--	--	--
MAR.											
29...	1050	6.0	2780	274	2060	--	--	--	--	--	--
JUNE											
20...	1630	19.5	7590	2370	48600	18	33	70	90	98	100
JULY											
24...	1630	23.0	2470	625	4170	45	64	80	92	100	--
AUG.											
20...	1100	20.5	2120	181	1040	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	NUMBER OF SAM-PLING POINTS	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM
APR.							
23...	1040	10.5	2700	5	1	1	37
JULY							
24...	1630	23.0	2470	5	1	1	23

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
APR.							
23...	83	86	86	87	88	91	91
JULY							
24...	34	37	38	38	41	55	65

06285100 SHOSHONE RIVER NEAR LOVELL, WYO.

LOCATION.--Lat 44°50'20", long 108°26'00", in NW¼NW¼ sec.16, T.56 N., R.96 W., Big Horn County, at gaging station, 30 ft (9 m) upstream from bridge on U.S. Highway 310, and 1.5 mi (2.4 km) west of Lovell.

DRAINAGE AREA.--2,350 mi^2 (6,090 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1966 to September 1974.
Water temperatures: October 1966 to September 1974.
Sediment records: October 1971 to September 1974.

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 1,260 micromhos Jan. 3; minimum daily, 238 micromhos June 26.
Water temperatures: Maximum, 24.0°C June 14; minimum, freezing point on many days during November to January and March.

Period of record:
Specific conductance: Maximum daily, 1,360 micromhos July 21, 1968; minimum daily, 238 micromhos June 26, 1974.
Water temperatures: Maximum, 30.0°C June 6, 1969; minimum, freezing point on many days during winter period.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
OCT. 30...	1000	590	14	85	30	110	4.8	267	0	320	13	.6
DEC. 04...	1220	738	15	97	29	78	4.7	263	0	270	11	.5
JAN. 16...	1010	A750	14	90	27	90	5.6	258	0	300	13	.5
FEB. 18...	1615	695	15	90	26	74	5.1	251	0	260	11	.7
MAR. 28...	0940	709	13	85	25	72	4.7	257	0	250	11	.5
APR. 24...	1025	618	14	66	20	67	3.8	208	0	210	11	.6
MAY 20...	2000	1100	15	56	19	69	3.2	205	0	190	8.5	.5
JUNE 20...	1940	11500	14	26	6.4	23	2.4	103	0	57	2.8	.3
JULY 16...	1700	2540	16	33	9.9	30	2.1	119	0	89	2.8	.3
AUG. 20...	1730	899	15	61	20	76	4.2	208	0	200	10	.5
SEP. 18...	1545	604	14	64	23	84	4.9	215	--	230	10	.6

A Daily mean discharge

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)
OCT. 30...	.83	.19	713	.97	1140	340	120	2.6	1040	8.1	4.5
DEC. 04...	.75	.04	638	.87	1270	360	150	1.8	946	8.1	.0
JAN. 16...	1.0	.37	672	.91	1360	340	120	2.1	982	7.9	.5
FEB. 18...	.56	.11	608	.83	1140	330	130	1.8	895	8.2	4.5
MAR. 28...	.39	.20	590	.80	1130	320	100	1.8	880	8.1	7.0
APR. 24...	.48	.66	497	.68	829	250	77	1.9	762	7.8	10.5
MAY 20...	.92	--	467	.64	1390	220	50	2.0	734	7.3	7.5
JUNE 20...	.19	--	186	.25	5780	91	7	1.0	289	8.0	17.0
JULY 16...	.46	.00	244	.33	1670	120	26	1.2	386	7.6	23.5
AUG. 20...	.99	.06	494	.67	1200	230	64	2.2	765	7.6	15.5
SEP. 18...	.90	.23	541	.74	882	250	78	2.3	850	--	16.5

06285100 SHOSHONE RIVER NEAR LOVELL, WYOMING--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	686	910	884	910	876	912	872	1000	803	249	710	795
2	687	941	954	931	885	902	905	974	782	271	696	759
3	705	984	947	1260	879	906	926	970	682	274	712	777
4	738	999	909	941	892	888	922	996	862	288	710	779
5	731	1010	885	919	899	898	904	967	878	296	678	786
6	711	1030	854	949	880	907	922	938	864	287	690	788
7	708	1040	919	923	887	881	932	935	886	296	708	829
8	752	1090	861	937	881	903	949	923	768	314	707	787
9	736	1040	852	987	886	886	918	950	813	313	699	838
10	747	1010	848	1000	814	902	957	881	738	321	676	820
11	774	1100	874	1060	902	894	997	831	728	315	656	824
12	764	1080	900	890	887	898	986	819	678	332	625	797
13	762	1080	888	919	914	912	994	822	686	361	677	787
14	784	1030	907	930	932	887	973	778	692	348	711	786
15	760	998	798	930	923	876	1010	782	559	372	711	776
16	750	1010	883	1030	912	894	914	800	528	389	717	781
17	747	1040	876	1060	921	899	890	813	480	398	705	807
18	771	1010	877	982	910	910	931	810	407	418	680	808
19	867	1010	870	927	910	930	835	759	371	407	708	806
20	822	1020	868	932	866	760	839	770	324	458	754	812
21	873	1020	877	900	905	867	855	783	299	450	727	856
22	855	953	812	901	848	880	813	823	282	472	749	824
23	855	952	874	831	907	874	777	814	260	511	749	809
24	879	946	860	875	869	888	806	815	262	511	783	818
25	920	954	887	902	857	895	797	839	252	532	803	826
26	923	947	869	895	893	878	809	785	238	564	823	864
27	919	946	853	897	894	899	798	824	250	591	823	876
28	913	958	873	885	891	922	1040	821	258	641	827	842
29	944	932	864	876	---	930	815	849	249	660	827	814
30	932	926	836	902	---	866	885	794	249	699	819	782
31	953	---	874	892	---	877	---	744	---	668	801	---
MONTH	805	999	875	941	890	891	899	851	538	420	731	808
YEAR	MAX	1260	MIN	238	MEAN	803						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	4.0	6.0	0.0	3.0	8.0	7.0	15.0	17.5	16.0	22.0	14.0
2	15.0	3.0	5.0	0.0	2.0	6.0	7.0	15.0	8.5	15.0	21.0	16.0
3	13.0	2.0	3.0	1.0	3.0	5.0	9.0	16.0	17.5	18.0	21.0	14.0
4	13.0	3.0	2.0	0.0	4.0	3.0	9.0	17.0	16.5	19.0	18.0	17.0
5	12.0	3.0	4.0	1.0	2.0	3.5	9.0	18.0	12.5	19.0	19.0	16.0
6	12.0	6.0	6.0	0.0	1.0	4.0	8.0	16.0	19.0	19.0	22.0	19.0
7	15.0	5.0	4.0	0.0	1.0	4.5	9.0	16.0	12.0	19.0	16.0	19.0
8	11.0	4.0	4.0	0.0	3.0	5.0	8.0	16.0	14.0	20.0	19.0	19.0
9	9.0	6.0	5.0	0.0	4.0	4.5	6.0	17.0	18.0	20.0	18.0	18.0
10	10.0	8.0	2.0	0.0	4.0	6.0	7.0	12.0	18.0	22.0	16.5	17.0
11	10.0	8.0	4.0	0.0	4.0	8.0	6.0	15.0	21.0	19.0	17.0	12.0
12	12.0	8.0	5.0	0.0	4.0	8.0	6.0	16.0	20.0	20.0	17.5	12.0
13	12.0	8.0	4.0	1.0	5.5	7.5	6.0	18.0	23.0	19.0	18.5	16.0
14	11.5	7.0	3.0	1.0	6.5	5.0	8.0	12.0	24.0	20.0	17.5	16.0
15	12.0	7.0	3.0	1.0	5.0	7.0	4.0	12.0	19.0	21.0	16.5	17.0
16	13.0	7.0	4.0	1.0	5.0	7.0	9.0	12.0	19.0	18.0	19.0	18.0
17	14.0	7.0	5.0	3.0	4.0	10.0	11.0	13.0	21.0	22.0	19.0	17.0
18	15.0	7.0	2.0	1.0	4.5	10.0	14.0	15.0	17.0	21.0	19.0	17.0
19	11.0	6.0	0.0	3.0	5.0	3.0	14.0	13.0	17.0	22.0	18.0	16.0
20	11.0	7.0	2.0	4.0	4.5	0.0	10.0	9.0	18.0	21.0	17.0	16.0
21	11.0	4.0	4.0	3.0	3.5	4.0	12.0	9.0	17.0	22.0	19.0	16.0
22	12.0	4.0	4.0	1.0	3.5	3.0	7.0	14.0	17.0	22.0	20.0	15.0
23	13.0	4.0	4.0	3.0	2.0	1.0	10.0	17.0	17.0	21.0	20.0	15.0
24	11.0	3.0	3.0	3.0	3.0	3.0	11.0	19.0	18.0	22.0	21.0	16.0
25	10.0	3.0	3.0	4.0	5.5	8.0	18.0	16.0	20.0	22.0	21.0	15.0
26	8.0	3.0	1.0	2.0	5.0	12.0	11.0	15.0	18.0	18.0	20.0	15.0
27	9.0	2.0	0.0	2.0	5.0	9.0	11.0	14.0	19.0	22.0	20.0	11.0
28	11.0	0.0	1.0	4.0	5.0	9.0	10.0	16.5	19.0	22.0	19.0	12.0
29	8.0	5.5	1.0	3.0	---	7.0	15.0	12.0	19.0	22.0	18.0	13.0
30	10.0	4.0	2.0	3.0	---	6.0	16.0	11.0	17.0	21.0	16.0	13.0
31	7.0	---	0.0	2.0	---	7.0	---	12.0	---	22.0	16.0	---
MONTH	11.5	5.0	3.0	1.5	4.0	6.0	9.5	14.0	18.0	20.0	19.0	15.5
YEAR	MAX	24.0	MIN	0.0	MEAN	10.5						

06285100 SHOSHONE RIVER NEAR LOVELL, WYOMING--Continued

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
OCT.											
02...	0850	12.0	1070	117	341	--	--	--	--	--	--
30...	1000	4.5	590	22	35	--	--	--	--	--	--
DEC.											
04...	1220	.0	730	52	103	--	--	--	--	--	--
FEB.											
18...	1615	4.5	695	92	175	--	--	--	--	--	--
MAR.											
28...	0940	7.0	709	217	415	--	--	--	--	--	--
APR.											
24...	1025	10.5	618	512	854	--	--	--	--	--	--
MAY											
20...	2000	7.5	1100	919	2730	25	40	73	90	100	--
JUNE											
20...	1940	17.0	11500	2600	80700	34	53	78	91	99	100
JULY											
16...	1700	23.5	2540	139	953	--	--	--	--	--	--
AUG.											
20...	1730	15.5	899	160	388	--	--	--	--	--	--
SEP.											
18...	1545	16.5	604	30	49	--	--	--	--	--	--

06286258 BIG COULEE NEAR LOVELL, WYO.

LOCATION.--Lat 44°58'04", long 108°17'24", in SE¼NW¼NE¼ sec.34, T.58 N., R.95 W., Big Horn County, at gaging station, 300 ft (91 m) downstream from county road, 0.6 mi (1.0 km) upstream from mouth, and 10 mi (16 km) northeast of Lovell.

DRAINAGE AREA.--30.1 mi² (78.0 km²). Area at site used Aug. 31, 1972 to Apr. 23, 1974, 28.8 mi² (74.6 km²).

PERIOD OF RECORD.--Sediment records: April 1970 to September 1974.

EXTREMES.--1973-74:
Sediment concentrations: Maximum daily, not determined; minimum daily, no flow for many days during year.
Sediment discharge: Maximum daily, 6,690 tons (6,070 tonnes) July 20; minimum daily, 0 tons on many days during year.

Period of record:
Sediment concentrations: Maximum daily, not determined; minimum daily, no flow for many days each year.
Sediment discharge: Maximum daily, 11,800 tons (10,700 tonnes) July 28, 1973; minimum daily, 0 tons on many days each year.

MONTHLY AND ANNUAL SUMMARY OF WATER AND SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

MONTH	DISCHARGE (CFS-DAYS)	RUNOFF (ACRE-FEET)	SUSPENDED SEDIMENT					
				DAILY DISCHARGE (TONS)			CONCENTRATION (MG/L)	
			DISCHARGE (TONS)	MEAN	MAXIMUM	MINIMUM	WEIGHTED MEAN	MAXIMUM OBSERVED
OCTOBER 1973...	0	0	0	0	0	0		
NOVEMBER.......	0	0	0	0	0	0		
DECEMBER.......	0	0	0	0	0	0		
JANUARY 1974...	0	0	0	0	0	0		
FEBRUARY.......	0	0	0	0	0	0		
MARCH..........	0	0	0	0	0	0		
APRIL..........	0	0	0	0	0	0		
MAY............	0	0	0	0	0	0		
JUNE...........	.67	1.3	48	1.60	48	0		
JULY...........	22.31	44	6,782.01	219	6,690	0		
AUGUST.........	27.72	55	5,472.1	177	4,220	0		
SEPTEMBER......	0	0	0	0	0	0		
WATER YEAR...	50.70	101	12,302.11	34	6,690	0		

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM
JULY									
20...	1920	19.5	5.5	16000	230	62	97	100	--
30...	1745	21.5	38	31900	3270	40	87	99	100
AUG.									
20...	1045	12.0	370	99200	99100	28	60	96	100
20...	1250	13.5	31	27400	2290	46	89	99	100

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT.

LOCATION.--Lat 45°19'00", long 107°55'05", in NW¼NE¼ sec.16, T.6 S., R.31 E., Big Horn County, at gaging station 800 ft (244 m) downstream from Yellowtail afterbay dam, 1,500 ft (460 m) downstream from Lime Kiln Creek, and 14 mi (23 km) southwest of St. Xavier.

DRAINAGE AREA.--19,667 mi^2 (50,938 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1966 to September 1974.
Water temperatures: December 1962 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 635 mg/l Apr. 1-30; minimum, 330 mg/l Aug. 13-31.
Hardness: Maximum, 340 mg/l Apr. 1-30; minimum, 170 mg/l Aug. 13-31.
Specific conductance: Maximum daily, 981 micromhos Oct. 4; minimum daily, 498 micromhos Aug. 28, 29.
Water temperatures: Maximum, 18.5°C Sept. 7, 9; minimum, 1.5°C on several days during March.
Period of record:
Dissolved solids: Maximum, 842 mg/l Jan. 1-31, 1967; minimum, 322 mg/l Aug. 1-31, 1971.
Hardness: Maximum, 394 mg/l Mar. 1-31, 1967; minimum, 160 mg/l Sept. 1-18, 1971.
Specific conductance: Maximum daily, 1,180 micromhos on several days during 1966-67; minimum daily, 492 micromhos Aug. 28, 1971.
Water temperatures: Maximum, 24.5°C on several days during 1963-65; minimum, freezing point on many days during winter periods most years prior to regulation, above freezing point during winter periods since.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Thermograph records furnished by Montana Department of Fish and Game. Flow regulated since Nov. 3, 1965, by Bighorn Lake.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	4380	--	12	10	78	25	89	4.2	205	0	290
NOV.												
01-30	--	5070	--	11	0	76	25	81	4.8	200	0	280
DEC.												
01-31	--	2780	--	11	10	77	26	82	4.2	206	0	290
JAN.												
01-31	--	2830	--	10	20	75	26	78	3.9	200	0	270
FEB.												
01-28	--	4000	--	10	10	77	26	78	3.6	204	0	280
MAR.												
01-31	--	4800	--	11	10	82	28	81	3.8	215	0	300
APR.												
01-30	--	5410	--	11	10	84	32	81	4.4	221	0	300
MAY												
01-31	--	4300	--	10	10	81	28	82	4.5	223	0	300
JUNE												
02-30	--	6320	--	9.1	20	80	27	80	4.6	215	0	280
JULY												
01-15	--	8950	--	8.2	140	69	26	64	3.8	190	1	250
16-31	--	5430	--	9.1	20	57	20	50	3.3	163	--	190
AUG.												
01-12	--	2550	--	8.9	10	50	15	48	3.3	147	--	160
13-31	--	3170	--	11	10	45	14	42	2.8	141	--	140
SEP.												
01-09	--	3020	--	11	40	56	16	55	1.3	162	--	170
10-30	--	2900	--	11	10	63	17	70	1.6	178	--	230
WTD. AVG.	--	--	--	10	23	74	25	75	3.9	201	0	260
TIME WTD. AVG.	--	4480	--	10	17	73	25	75	3.8	198	0	264
TOT. LOAD (TONS)	--	--	--	44500	98	321000	110000	325000	16800	860000	362	1157000

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
DEC.												
05...	1315	2970	8.0	11	30	78	27	84	3.8	206	0	290
MAR.												
12...	1330	4830	4.0	11	120	81	27	88	4.2	216	0	300
JUNE												
06...	1045	6240	8.5	9.6	60	81	28	80	3.8	218	0	300

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-31	11	.5	.41	.02	613	.83	7250	300	130	2.2	960	7.8
NOV.												
01-30	11	.4	.33	.01	589	.80	8060	290	130	2.1	891	8.1
DEC.												
01-31	12	.4	.31	.03	606	.82	4550	300	130	2.1	919	8.0
JAN.												
01-31	11	.5	.34	.00	575	.78	4390	290	130	2.0	909	8.2
FEB.												
01-28	10	.5	.26	.00	587	.80	6340	300	130	2.0	908	7.8
MAR.												
01-31	11	.5	.27	.01	625	.85	8100	320	140	2.0	941	8.0
APR.												
01-30	12	.4	.21	.00	635	.86	9280	360	160	1.9	957	8.1
MAY												
01-31	13	.4	.19	.00	630	.86	7310	320	130	2.0	954	7.9
JUNE												
02-30	13	.4	.24	.00	601	.82	10300	310	130	2.0	911	8.0
JULY												
01-15	10	.3	.31	.01	528	.72	12800	280	120	1.7	817	--
16-31	7.0	.3	.20	.01	418	.57	6130	220	91	1.5	670	--
AUG.												
01-12	6.3	.3	.26	.01	365	.50	2510	190	66	1.5	589	--
13-31	5.1	.3	.13	.01	330	.45	2020	170	54	1.4	526	--
SEP.												
01-09	5.8	.3	.17	.01	395	.54	3720	200	70	1.7	647	--
10-30	8.1	.4	.28	.00	490	.67	3840	230	81	2.0	765	--
WTD. AVG.	11	.4	.27	.01	568	.77	--	290	124	1.9	870	--
TIME WTD. AVG.	10	.4	.27	.01	561	.76	--	285	121	1.9	861	--
TOT. LOAD (TONS)	46100	1770	1170	32	2458080	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
DEC.												
05...	12	.5	.37	.02	610	.83	4890	310	140	2.1	917	8.2
MAR.												
12...	13	.4	.43	.01	633	.86	8260	310	140	2.2	956	8.2
JUNE												
06...	13	.3	.30	.00	625	.85	10500	320	140	2.0	945	8.1

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT.			
02...	1415	5470	.03
NOV.			
06...	0950	7780	.02
DEC.			
05...	1315	2970	.02
JAN.			
21...	1545	2810	.04
FEB.			
12...	1430	3959	.03
MAR.			
12...	1330	4830	.02
APR.			
09...	1530	5550	.02
MAY			
07...	1330	3520	.04
JUNE			
06...	1045	6240	.07
JULY			
02...	1500	7930	.02
AUG.			
06...	1500	2040	.03
SEP.			
04...	1700	2450	.05

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	971	883	901	900	875	897	909	926	---	888	596	566
2	971	883	885	868	875	897	931	926	912	886	587	587
3	978	878	898	868	875	897	931	938	924	886	604	598
4	981	878	898	868	873	900	943	950	912	883	585	628
5	971	861	898	875	873	897	928	938	912	857	577	654
6	971	868	883	900	886	897	928	938	981	844	585	660
7	971	868	---	869	886	900	928	938	918	839	576	681
8	971	854	881	869	881	924	928	944	909	839	576	699
9	959	854	883	862	---	927	931	938	909	828	577	699
10	959	839	878	862	878	927	931	938	915	795	---	711
11	956	839	878	881	873	927	931	938	912	795	562	714
12	956	852	883	881	873	927	931	935	912	768	567	727
13	947	852	888	861	---	924	---	941	912	757	556	747
14	947	866	883	861	873	924	931	926	912	741	538	747
15	947	854	883	877	---	---	934	935	906	754	538	747
16	933	854	878	858	873	927	934	926	906	741	556	758
17	927	878	878	858	873	924	934	944	906	733	533	752
18	959	883	903	863	871	927	931	944	906	724	525	752
19	938	888	893	860	873	927	931	929	906	719	509	---
20	924	883	881	860	873	930	931	929	908	716	509	767
21	924	885	861	872	883	924	931	926	906	697	509	767
22	913	883	881	872	---	924	928	923	---	687	509	767
23	900	883	883	862	886	927	931	926	887	687	505	767
24	900	883	903	874	888	927	931	926	879	684	502	767
25	900	885	881	871	877	927	931	926	876	678	516	779
26	900	883	881	871	877	927	931	926	876	674	508	766
27	900	888	883	860	875	927	934	923	876	657	508	777
28	900	878	883	860	877	924	934	935	876	657	498	769
29	900	856	903	860	---	924	934	935	---	626	498	771
30	900	881	903	860	---	924	934	935	876	626	512	766
31	897	---	906	876	---	927	---	935	---	626	542	---
MONTH	938	871	887	869	877	919	931	933	903	751	542	720

YEAR	MAX	981	MIN	498	MEAN	866

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	14.5	14.0	11.5	11.0	8.0	7.0	5.0	5.0	3.5	3.0	3.0	3.0
2	14.0	14.0	11.5	11.5	8.0	7.0	5.0	4.5	3.5	3.5	3.0	3.0
3	14.5	14.0	11.5	11.5	7.0	7.0	5.0	5.0	3.5	3.5	3.0	2.0
4	14.5	14.0	11.5	11.5	7.0	7.0	5.0	4.5	3.5	3.5	3.0	2.0
5	14.5	14.0	11.5	11.5	7.0	6.5	5.0	4.5	3.5	3.5	3.0	2.0
6	14.5	14.0	11.5	11.5	7.0	6.5	4.5	4.5	3.5	3.5	3.0	2.0
7	14.5	14.5	11.5	11.5	8.0	7.0	4.5	4.5	3.5	3.5	3.0	2.0
8	14.5	14.5	11.5	11.5	8.0	7.0	4.5	4.5	3.5	3.5	2.0	2.0
9	14.5	14.0	11.5	11.5	7.0	6.5	4.5	4.5	3.5	3.0	2.0	2.0
10	14.5	14.0	11.5	11.5	7.0	6.5	4.5	4.0	3.5	3.0	2.0	2.0
11	14.5	14.0	11.5	11.0	7.0	7.0	4.5	4.0	3.5	3.0	2.0	2.0
12	14.5	14.0	11.0	11.0	7.0	6.5	4.5	4.0	3.5	3.0	2.0	2.0
13	14.5	14.5	11.0	10.5	6.5	6.5	4.5	4.0	3.5	3.0	2.0	2.0
14	14.5	14.5	10.5	10.0	6.5	6.0	4.5	4.0	3.5	3.0	2.0	2.0
15	14.5	14.0	10.0	10.0	6.0	6.0	4.5	4.5	3.5	3.0	2.0	2.0
16	14.5	14.0	10.0	10.0	6.5	6.0	4.5	4.5	3.5	3.0	2.0	2.0
17	14.5	14.0	10.0	9.5	6.5	6.0	4.5	4.0	3.0	3.0	2.0	2.0
18	14.5	14.0	9.5	9.0	6.0	5.5	4.0	4.0	3.5	3.0	2.0	2.0
19	14.0	14.0	9.0	8.5	5.5	5.5	4.5	4.0	3.0	3.0	2.0	1.5
20	14.0	13.5	8.5	8.5	6.0	5.5	4.5	4.0	3.0	3.0	2.0	1.5
21	13.5	13.5	8.5	8.5	6.5	6.0	4.0	4.0	3.0	3.0	2.0	1.5
22	13.5	13.0	8.5	8.0	6.5	6.0	4.0	3.5	3.0	3.0	2.0	1.5
23	13.5	13.0	8.5	8.0	6.0	5.5	4.0	3.5	3.0	3.0	2.0	1.5
24	13.0	13.0	8.5	8.0	6.0	5.5	4.0	3.5	3.0	3.0	2.0	1.5
25	13.0	12.0	8.0	8.0	6.0	5.5	4.0	4.0	3.0	3.0	2.0	1.5
26	12.0	11.5	8.0	8.0	6.0	5.5	4.0	3.5	3.0	3.0	2.0	2.0
27	12.0	11.5	8.0	7.0	6.0	5.5	3.5	3.5	3.0	3.0	2.0	2.0
28	12.0	11.5	8.5	7.0	5.5	5.5	3.5	3.5	3.0	2.0	2.0	2.0
29	12.0	11.5	9.0	8.0	5.5	5.5	3.5	3.5	---	---	2.0	2.0
30	11.5	11.5	8.5	8.0	5.5	5.0	3.5	3.5	---	---	2.0	2.0
31	11.5	11.5	---	---	5.0	5.0	3.5	3.0	---	---	3.0	2.0
MONTH	14.5	11.5	11.5	7.0	8.0	5.0	5.0	3.0	3.5	2.0	3.0	1.5

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT.--Continued

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	3.0	2.0	4.0	3.5	5.0	4.5	10.5	9.5	16.5	16.5	17.0	16.5
2	2.0	2.0	3.5	3.5	6.0	5.5	11.0	10.0	16.5	16.5	17.0	16.5
3	2.0	2.0	4.0	3.5	6.0	5.5	11.0	10.5	17.0	16.5	18.0	17.0
4	2.0	2.0	4.0	3.5	6.5	6.0	11.0	10.5	17.0	16.5	18.0	17.0
5	3.0	2.0	4.0	3.5	6.0	6.0	11.0	10.5	17.0	16.5	18.0	17.0
6	3.0	2.0	4.0	3.5	6.5	6.0	12.0	11.0	17.0	16.5	18.0	17.0
7	3.0	2.0	4.0	3.5	6.5	6.5	12.0	12.0	16.5	16.5	18.5	18.0
8	3.0	3.0	4.0	3.5	7.0	6.5	13.0	12.0	17.0	16.5	18.0	18.0
9	3.0	3.0	4.0	3.5	8.0	7.0	13.0	12.0	16.5	16.5	18.5	18.0
10	3.0	2.0	3.5	3.5	7.0	7.0	13.0	12.0	17.0	16.5	18.0	17.0
11	3.0	2.0	4.0	3.5	8.0	7.0	13.5	13.0	17.0	16.5	17.0	16.5
12	3.0	2.0	4.0	3.5	8.0	7.5	14.0	13.5	17.0	16.5	16.5	16.5
13	3.0	2.0	3.5	3.5	8.0	7.0	14.0	13.5	17.0	16.5	17.0	16.5
14	3.0	2.0	4.0	3.5	8.0	8.0	14.5	14.0	16.5	16.5	16.5	16.0
15	3.0	2.0	4.0	3.5	8.5	8.0	14.5	14.0	17.0	16.5	17.0	16.5
16	3.0	3.0	4.5	3.5	8.5	8.5	14.5	14.5	17.0	16.5	16.5	16.5
17	3.0	3.0	4.0	3.5	9.0	8.5	15.0	14.5	17.0	16.5	17.0	16.5
18	3.0	3.0	4.0	3.5	9.0	8.5	15.0	14.5	18.0	16.5	16.5	16.5
19	3.5	3.0	4.0	4.0	9.0	8.5	15.0	15.0	17.0	17.0	16.5	16.5
20	3.5	3.5	4.0	4.0	9.0	8.5	15.5	15.0	17.0	16.5	16.5	16.0
21	3.5	3.0	4.5	3.5	9.0	9.0	15.5	15.5	17.0	16.5	16.5	16.0
22	3.5	3.0	4.5	4.0	9.0	9.0	16.0	15.5	18.0	17.0	16.5	16.0
23	3.5	3.0	4.5	4.0	9.5	9.0	16.0	15.5	18.0	17.0	16.5	16.0
24	3.5	3.0	4.5	4.0	9.5	9.0	16.0	15.5	18.0	17.0	16.0	15.5
25	3.5	3.5	4.5	4.0	9.5	9.0	16.0	15.5	18.0	17.0	16.0	15.5
26	3.5	3.5	5.0	4.0	9.5	9.5	16.0	16.0	17.0	17.0	16.0	15.5
27	3.5	3.5	5.0	4.5	9.5	9.0	16.5	16.0	17.0	17.0	15.5	15.5
28	3.5	3.5	4.5	4.0	9.0	9.0	16.5	16.0	17.0	16.5	15.5	15.0
29	3.5	3.5	4.5	4.0	9.5	9.0	16.5	16.0	17.0	16.5	15.5	15.0
30	3.5	3.5	5.0	4.5	9.5	9.5	16.5	16.5	17.0	16.5	15.5	15.0
31	---	---	5.0	4.5	---	---	16.5	16.0	17.0	16.5	---	---
MONTH	3.5	2.0	5.0	3.5	9.5	4.5	16.5	9.5	18.0	16.5	18.5	15.0
YEAR	18.5	1.5										

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MT.
(Hydrologic bench-mark station)

LOCATION.--Lat 45°28'40", long 108°00'33", on west line of sec.15, T.4 S., R.30 E., Big Horn County, at gaging station 1 mi (1.6 km) downstream from Point Creek, 3 mi (4.8 km) upstream from Muddy Creek, and 14 mi (23 km) west of St. Xavier.

DRAINAGE AREA.--100 mi² (259 km²).
PERIOD OF RECORD.--Chemical analyses: September 1967 to September 1974.
Sediment records: February 1968 to September 1974.

REMARKS.--Flow not regulated except for diversions for irrigation of about 200 acres (809,000 m²) above station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
OCT.											
16...	1300	9.1	15	20	17	210	47	37	2.7	215	0
NOV.											
15...	1030	12	12	10	30	160	36	90	2.4	284	0
DEC.											
19...	1100	3.5	14	--	--	220	62	69	2.8	236	0
JAN.											
16...	1400	102	5.8	--	--	39	11	82	3.4	98	0
FEB.											
12...	1030	8.5	12	--	--	200	47	100	2.9	247	0
MAR.											
12...	1100	15	7.3	--	--	100	27	190	4.1	188	0
APR.											
09...	1045	14	10	--	--	160	41	40	2.0	280	0
MAY											
07...	1030	25	26	--	--	150	30	33	2.3	245	0
JUNE											
06...	1530	35	12	--	--	140	38	68	2.7	244	--
JULY											
02...	1000	29	14	--	--	170	39	86	2.8	211	--
AUG.											
06...	1120	15	14	--	--	190	47	80	2.0	166	--
SEP.											
18...	1230	19	15	--	--	200	49	30	2.7	183	--

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO
OCT.										
16...	610	2.5	.2	1130	1030	1.54	27.8	720	540	.6
NOV.										
15...	430	2.2	.3	833	809	1.13	25.9	550	360	.9
DEC.										
19...	600	3.8	.4	1140	1150	1.55	10.8	760	570	.9
JAN.										
16...	240	3.1	.5	453	433	.62	223	140	62	3.0
FEB.										
12...	660	4.3	.4	1240	1150	1.69	28.5	690	490	1.7
MAR.										
12...	560	5.4	.5	940	932	1.28	36.3	360	230	3.4
APR.										
09...	480	2.3	.4	870	857	1.18	34.3	570	380	.9
MAY										
07...	390	2.4	.4	790	763	1.07	54.2	530	330	.6
JUNE										
06...	390	2.8	.3	808	764	1.10	76.4	510	310	1.1
JULY										
02...	390	2.2	.0	815	748	1.11	63.8	590	410	.5
AUG.										
06...	510	2.4	.3	968	868	1.32	39.2	670	530	.3
SEP.										
18...	540	2.4	.4	1040	930	1.41	28.1	700	550	.5

DATE	TIME	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	CYANIDE (CN) (MG/L)
OCT.									
16...	1300	--	.00	--	.06	.05	1.5	3.4	--
NOV.									
15...	1030	--	.02	--	.06	.03	--	4.7	--
DEC.									
19...	1100	.16	--	.05	--	--	--	6.0	--
JAN.									
16...	1400	.21	--	1.5	--	--	--	7.9	.00
FEB.									
12...	1030	.25	--	.09	--	--	--	7.9	--
MAR.									
12...	1100	.27	--	2.2	--	--	--	6.4	--
APR.									
09...	1045	.03	--	.03	--	--	--	3.7	--
MAY									
07...	1030	.08	--	.17	--	--	--	3.1	--
JUNE									
06...	1530	.10	--	.16	--	--	--	20	--
JULY									
02...	1000	.19	--	.11	--	--	--	5.4	--
AUG.									
06...	1120	.00	--	.03	--	--	--	2.7	--
SEP.									
18...	1230	.00	--	.05	--	--	--	2.9	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
JAN.							
16...	1400	20	0	<10	30	80	8100

DATE	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN.						
16...	<100	2200	.0	5	<10	310

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)
OCT.											
16...	1300	9.0	18.0	1375	9.8	96	8.0	176	350	--	--
NOV.											
15...	1030	3.0	9.5	1134	11.4	96	7.9	192	930	280	370
DEC.											
19...	1100	.5	-2.0	1520	12.6	98	7.8	194	53	13	95
JAN.											
16...	1400	6.0	17.5	690	11.0	100	7.3	80	3800	510	1400
FEB.											
12...	1030	.5	8.0	1560	12.6	99	7.7	203	33	26	84
MAR.											
12...	1100	3.0	11.0	1290	11.6	98	7.6	130	--	100	2100
APR.											
09...	1045	8.5	13.5	1100	10.6	102	8.0	189	48	11	570
MAY											
07...	1030	14.0	19.0	1080	7.8	87	8.1	201	1200	140	2600
JUNE											
06...	1530	16.0	24.0	1110	9.4	107	7.3	200	1400	80	3100
JULY											
02...	1000	17.5	20.9	1080	7.7	92	7.8	173	1300	1500	2000
AUG.											
06...	1120	18.0	33.5	1240	8.3	98	8.0	136	400	140	280
SEP.											
18...	1230	14.0	22.5	1480	8.9	97	8.0	150	1400	270	890

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM
OCT.								
16...	1300	9.0	9.1	68	1.7	--	--	--
NOV.								
15...	1200	3.0	12	298	9.7	--	--	--
DEC.								
19...	1100	.5	3.5	90	.85	--	--	--
JAN.								
16...	1400	6.0	182	3380	1660	--	--	--
FEB.								
12...	1030	.5	8.5	286	6.6	--	--	--
MAR.								
12...	1200	3.0	14	5940	225	90	97	100
APR.								
09...	1205	8.5	14	86	3.2	--	--	--
MAY								
07...	1105	14.0	25	284	19	--	--	--
JUNE								
06...	1530	16.0	35	470	44	--	--	--
08...	1700	--	650	9870	17300	--	--	--
JULY								
02...	1000	17.5	29	426	33	--	--	--
AUG.								
06...	1155	18.0	15	84	3.4	--	--	--
SEP.								
18...	1115	14.0	10	106	2.9	--	--	--

06288500 BIGHORN RIVER NEAR HARDIN, MT.

LOCATION.--Lat 45°43'46", long 107°34'52", in NE¼SE¼ sec.24, T.1 S., R.33 E., Big Horn County, on left bank at city water plant, 0.5 mi (0.8 km) upstream from former gaging station, 1 mi (1.6 km) upstream from Little Bighorn River, 1.4 mi (2.3 km) east of Hardin, and at mile 41.0 (66.0 km).

DRAINAGE AREA.--20,722 mi² (53,670 km²), at former gaging station.

PERIOD OF RECORD.--Chemical analyses: January to September 1951, July 1969 to September 1973 (discontinued).
Water temperatures: December 1962 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 21.5°C Aug. 6; minimum, 0.5°C on several days during December and January.
Period of record:
Water temperatures: Maximum (1962-64, 1967-74), 26.0°C Aug. 10, 1963, July 21, 22, 1964; minimum, freezing point on many days during winter periods most years.

REMARKS.--Temperature recorder at Two Leggins Canal diversion dam 9.5 mi (15.3 km) upstream from sampling site. Thermograph records furnished by Montana Department of Fish and Game. Records of discharge are estimated from Bighorn River near St. Xavier, Mt. (station 06287000). Flow regulated by reservoirs and diversions for irrigation upstream from station.

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	15.5	13.5	10.0	9.0	5.5	5.0	1.5	0.5	3.0	1.0	5.0	3.5
2	13.5	13.0	10.0	9.5	5.5	4.5	1.5	1.0	3.0	2.0	3.5	3.0
3	14.5	13.0	10.0	9.5	4.5	4.5	1.0	0.5	3.5	3.0	3.0	1.5
4	15.0	12.0	10.5	10.0	5.0	4.5	2.0	0.5	3.5	3.0	4.0	2.0
5	15.0	13.0	10.0	9.5	5.0	4.0	1.0	0.5	3.0	1.5	4.0	2.0
6	15.0	13.0	10.0	9.0	5.5	4.0	2.0	0.5	2.0	1.5	3.5	2.0
7	14.5	13.5	9.5	9.0	6.0	5.5	3.0	1.5	3.5	2.0	4.0	2.0
8	14.0	12.0	10.0	9.5	6.0	5.0	1.5	1.0	4.0	2.0	3.5	2.0
9	12.0	12.0	10.5	10.0	5.0	4.5	1.5	0.5	4.0	2.0	4.0	1.5
10	14.0	12.0	11.0	10.0	5.5	4.5	0.5	0.5	4.0	2.0	4.0	1.5
11	14.0	13.0	10.5	10.0	6.5	5.5	0.5	0.5	4.0	2.0	4.5	2.0
12	14.0	13.0	10.5	10.0	6.5	5.5	1.5	0.5	4.0	2.0	4.5	2.0
13	14.5	13.5	10.0	9.5	5.5	5.0	4.0	1.5	4.0	3.0	3.5	2.0
14	15.0	13.5	9.5	9.0	5.0	4.5	4.0	4.0	4.5	2.0	4.0	1.5
15	14.0	13.5	9.0	9.0	5.0	4.5	5.0	3.5	4.0	3.5	3.5	1.5
16	14.5	13.0	9.5	9.0	6.0	5.0	5.0	4.5	4.5	3.0	4.0	2.0
17	15.0	13.0	9.0	8.5	6.0	4.0	4.5	3.5	3.5	2.0	5.0	3.5
18	14.5	10.0	8.5	6.0	4.0	3.5	3.5	3.0	4.0	2.0	4.5	3.0
19	---	9.5	6.5	6.0	3.5	3.0	4.0	3.5	4.0	3.0	3.0	1.5
20	14.0	11.5	7.0	6.5	3.5	2.0	4.0	4.0	3.5	2.0	3.5	1.0
21	14.0	13.0	7.0	6.5	5.0	3.5	4.0	3.0	4.0	2.0	3.0	1.0
22	14.0	12.0	6.5	6.0	6.0	5.0	3.0	2.0	3.5	2.0	4.0	1.0
23	13.5	11.5	6.5	6.0	5.5	4.5	3.5	3.0	3.0	1.5	4.0	1.0
24	12.0	11.5	6.0	6.0	4.5	4.5	3.5	3.0	3.5	1.5	4.0	1.5
25	11.5	11.0	6.0	5.5	4.5	4.0	4.0	3.5	4.0	1.5	4.5	2.0
26	11.0	5.5	5.5	5.5	4.0	4.0	4.0	3.0	4.5	3.0	5.0	2.0
27	11.0	6.0	5.5	5.5	4.0	4.0	3.0	2.0	4.0	2.0	5.5	3.5
28	12.0	10.5	6.5	5.5	4.0	3.5	3.5	3.0	4.0	1.5	4.5	3.5
29	11.0	10.5	6.0	6.0	3.5	2.5	3.5	3.0	---	---	5.5	3.0
30	10.5	10.5	6.0	5.5	2.5	2.0	3.0	0.5	---	---	5.0	3.0
31	10.5	10.0	---	---	2.0	0.5	1.0	0.5	---	---	5.0	3.0
MONTH	15.5	5.5	11.0	5.5	6.5	0.5	5.0	0.5	4.5	1.0	5.5	1.0

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.0	3.0	8.5	4.5	10.0	5.5	12.0	10.5	20.5	16.5	18.0	15.0
2	4.5	3.0	7.0	5.0	10.5	6.0	13.0	11.0	20.5	16.5	19.0	15.5
3	5.0	3.0	8.5	4.5	10.5	6.0	15.5	11.5	20.5	16.5	19.5	15.5
4	5.0	3.0	8.5	5.0	9.0	6.5	15.0	11.0	20.0	17.0	19.5	17.0
5	5.0	3.0	9.0	5.0	9.0	6.5	14.5	11.5	21.0	17.0	19.5	16.0
6	5.5	3.5	8.5	5.5	10.0	6.5	15.0	12.0	21.5	18.0	19.5	16.5
7	5.0	3.5	9.0	5.5	8.5	8.0	16.0	13.5	19.0	16.5	19.0	16.5
8	6.0	3.0	7.0	5.5	10.0	8.0	16.5	13.5	18.0	16.0	20.0	17.0
9	6.0	3.5	7.0	5.0	13.0	9.0	16.0	13.5	18.5	16.0	19.0	16.0
10	4.0	3.5	6.5	5.5	12.0	9.0	16.0	13.0	20.0	16.5	16.0	14.0
11	5.0	3.5	8.0	4.5	13.0	8.5	16.5	14.0	18.5	16.5	18.5	13.5
12	4.0	3.5	7.0	5.0	14.0	9.0	17.0	14.0	19.0	16.5	16.5	14.0
13	3.5	3.5	5.5	4.0	13.5	9.5	18.0	14.0	20.0	16.0	18.0	14.5
14	5.0	3.0	8.0	4.0	14.0	10.0	18.5	14.5	18.0	15.5	18.0	15.0
15	6.0	3.0	9.0	4.5	14.0	9.5	19.0	15.0	19.5	15.5	18.5	15.5
16	6.5	3.5	8.0	4.0	13.5	10.0	18.5	15.5	20.0	16.5	18.5	15.5
17	6.0	4.0	5.5	5.0	14.5	10.5	19.5	15.5	20.0	17.0	18.5	15.5
18	7.0	4.0	6.5	5.0	14.0	10.5	19.0	16.0	20.5	17.0	17.0	15.5
19	6.5	4.0	5.5	5.0	15.0	10.0	19.5	15.5	19.5	17.0	16.5	15.0
20	6.0	4.5	5.5	4.5	15.0	10.5	19.5	16.0	17.0	16.0	16.5	14.0
21	6.0	4.0	6.5	4.5	13.5	10.5	20.5	16.0	19.5	16.0	16.5	14.0
22	7.0	4.0	8.0	5.0	15.0	10.0	20.0	16.5	20.0	16.5	16.5	14.5
23	8.0	4.5	9.5	5.0	15.0	10.5	20.0	16.0	20.0	17.0	16.5	14.5
24	8.0	4.0	9.5	5.5	14.5	11.0	20.0	16.0	20.0	17.0	16.5	14.5
25	8.0	4.5	9.5	6.0	14.0	10.5	20.0	16.5	20.0	17.0	16.5	15.0
26	6.5	5.0	10.0	6.0	14.0	10.5	20.5	16.0	19.5	16.5	15.0	13.0
27	5.5	4.5	9.0	4.5	14.0	10.0	20.0	16.5	20.0	16.0	14.5	13.5
28	6.5	5.0	8.0	5.0	13.0	10.0	20.5	16.0	18.5	16.5	14.5	13.5
29	6.5	4.0	6.5	5.5	13.5	10.0	20.5	16.0	19.0	16.0	14.5	13.0
30	7.0	4.0	7.0	5.0	13.5	10.0	19.5	16.5	17.0	16.0	15.0	13.0
31	---	---	7.0	5.5	---	---	20.5	16.5	17.0	15.5	---	---
MONTH	8.0	3.0	10.0	4.0	15.0	5.5	20.5	10.5	21.5	15.5	20.0	13.0
YEAR	21.5	0.5										

06290500 LITTLE BIGHORN RIVER BELOW PASS CREEK, NEAR WYOLA, MT.

LOCATION.--Lat 45°10'38", long 107°23'36", in W½SW¼ sec.35, T.7 S., R.35 E., Big Horn County, at gaging station 3.5 mi (5.6 km) north of Wyola and 6 mi (9.7 km) downstream from Pass Creek.

DRAINAGE AREA.--428 mi² (1,109 km²).

PERIOD OF RECORD.--Chemical analyses: October 1969 to September 1974.
Water temperatures: October 1969 to September 1974.
Sediment records: October 1969 to September 1973.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 476 mg/l Mar. 18-31; minimum, 205 mg/l June 13-21.
Hardness: Maximum, 320 mg/l Mar. 18-31; minimum, 180 mg/l June 13-21.
Specific conductance: Maximum daily, 828 micromhos Apr. 14; minimum daily, 331 micromhos May 29.
Water temperatures: Maximum, 22.5°C July 14; minimum, freezing point on many days during November to March.
Period of record:
Dissolved solids: Maximum, 476 mg/l Mar. 18-31, 1974; minimum, 193 mg/l June 1-15, 1972.
Hardness: Maximum, 320 mg/l Mar. 13-31, 1972, Mar. 18-31, 1974; minimum, 170 mg/l Feb. 11-15, June 1-24, June 25-30, 1971, June 1-15, 1972.
Specific conductance: Maximum daily, 828 micromhos Apr. 14, 1974; minimum daily, 322 micromhos June 8, 1972.
Water temperatures: Maximum, 22.5°C on several days during 1970-72, and 1974; minimum, freezing point on many days during winter periods.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Flow affected by ice during most of winter months. Flow regulated by diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-10	--	156	--	6.8	10	64	25	18	1.3	243	0	100
11-31	--	145	--	6.6	10	67	25	17	1.2	249	0	110
NOV.												
01-10	--	144	--	7.4	0	64	26	19	1.3	244	0	120
11-30	--	140	--	7.1	0	67	26	20	1.4	250	0	110
DEC.												
01-08	--	132	--	6.8	20	62	27	19	1.3	228	0	120
09-31	--	119	--	7.2	10	68	28	20	1.3	244	0	120
JAN.												
01-07	--	58	--	8.2	50	68	33	24	1.7	250	0	160
08-15	--	183	--	7.9	20	68	26	18	2.1	243	0	120
16-31	--	191	--	7.8	10	70	28	23	1.9	245	0	140
FEB.												
01-10	--	116	--	7.1	90	70	28	23	1.2	241	0	140
11-28	--	120	--	6.8	20	73	29	25	1.3	255	0	140
MAR.												
01-17	--	131	--	7.1	10	72	31	33	1.6	257	0	170
18-31	--	146	--	7.6	30	74	32	39	1.7	262	0	190
APR.												
01-10	--	139	--	6.6	20	72	32	31	1.7	253	0	160
11-20	--	300	--	11	10	68	32	46	3.1	243	0	180
21-30	--	427	--	8.4	10	61	20	15	1.5	231	0	72
MAY												
01-15	--	480	--	6.7	10	56	19	11	1.2	219	0	57
16-31	--	611	--	6.5	20	52	18	10	1.3	202	0	54
JUNE												
01-12	--	832	--	6.8	20	49	17	14	1.4	210	0	57
13-21	--	1060	--	6.1	20	46	15	5.9	1.0	196	0	33
22-30	--	570	--	6.3	20	53	18	7.1	.9	217	0	41
JULY												
01-10	--	387	--	6.8	20	53	22	14	1.6	226	--	59
11-31	--	220	--	7.1	20	53	23	14	1.3	226	1	65
AUG.												
01-09	--	140	--	7.9	10	61	24	13	2.0	246	--	93
10-31	--	120	--	7.9	10	63	27	22	1.9	260	--	110
SEP.												
01-30	--	134	--	7.2	10	66	26	22	.9	254	3	100
WTD. AVG.	--	--	--	7.1	17	58	22	16	1.4	227	0	85
TIME WTD. AVG.	--	252	--	7.2	16	64	25	20	1.5	240	0	109
TOT. LOAD (TONS)	--	--	--	1750	4	14500	5500	4090	346	56400	45	21000

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
DEC.												
03...	1300	130	1.5	6.6	40	70	27	17	1.3	250	0	110
MAR.												
06...	1545	139	2.5	6.8	20	76	30	35	1.8	262	0	180
JUNE												
05...	1200	941	9.0	5.5	60	47	15	7.4	1.2	182	0	43

06290500 LITTLE BIGHORN RIVER BELOW PASS CREEK, NEAR WYOLA, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA+MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
01-10	1.0	.2	.02	.01	336	.46	142	260	63	.5	545	8.1
11-31	1.5	.2	.02	.02	351	.48	137	270	66	.5	564	8.2
NOV.												
01-10	1.2	.3	.01	.01	360	.49	140	270	67	.5	574	8.1
11-30	1.2	.2	.05	.01	356	.48	135	270	69	.5	588	8.1
DEC.												
01-08	1.2	.1	.05	.00	350	.48	125	270	79	.5	564	8.2
09-31	1.9	.1	.13	.00	367	.50	118	290	85	.5	597	8.1
JAN.												
01-07	1.9	.2	.12	.01	421	.57	65.9	310	100	.6	675	8.1
08-15	1.8	.3	.13	.02	365	.50	180	280	78	.5	603	8.1
16-31	1.9	.2	.06	.01	394	.54	203	290	89	.6	640	8.1
FEB.												
01-10	1.9	.3	.07	.00	391	.53	122	290	92	.6	623	8.2
11-28	1.4	.2	.02	.01	403	.55	131	300	93	.6	650	8.0
MAR.												
01-17	2.0	.2	.01	.00	444	.60	157	310	97	.8	704	8.0
18-31	1.9	.2	.07	.01	476	.65	188	320	100	1.0	746	8.0
APR.												
01-10	2.2	.2	.00	.00	430	.58	161	310	100	.8	693	8.2
11-20	2.2	.3	.01	.01	462	.63	374	300	100	1.2	748	7.8
21-30	1.7	.2	.02	.00	294	.40	339	230	45	.4	506	8.1
MAY												
01-15	1.7	.1	.00	.00	261	.36	338	220	38	.3	448	8.2
16-31	.7	.1	.00	.00	242	.33	399	200	38	.3	419	7.9
JUNE												
01-12	1.1	.2	.00	.00	250	.34	562	190	20	.4	424	8.1
13-21	.7	.1	.01	.00	205	.28	587	180	16	.2	358	8.0
22-30	.7	.2	.00	.00	234	.32	360	210	28	.2	407	8.0
JULY												
01-10	1.5	.1	.00	.00	269	.37	281	220	38	.4	456	--
11-31	1.5	.2	.00	.00	278	.38	165	230	40	.4	468	--
AUG.												
01-09	1.5	.2	.00	.01	324	.44	122	250	49	.4	547	--
10-31	1.5	.2	.00	.01	362	.49	117	270	55	.6	594	--
SEP.												
01-30	1.0	.2	.00	.00	352	.48	127	270	59	.6	589	--
WTD. AVG.	1.3	.2	.02	.00	304	.42	--	237	50	.4	507	--
TIME WTD. AVG.	1.5	.2	.03	.01	347	.47	--	264	66	.5	570	--
TOT. LOAD (TONS)	325	42	4.3	.79	75400	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA+MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
DEC.												
03...	.6	.2	.09	.01	356	.48	128	290	81	.4	572	8.1
MAR.												
06...	1.6	.3	.12	.01	461	.63	164	310	98	.9	722	8.2
JUNE												
05...	1.1	.1	.19	.00	211	.29	536	180	30	.2	353	8.1

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT.			
11...	1425	158	.01
NOV.			
07...	1400	148	.02
DEC.			
03...	1300	130	.01
JAN.			
10...	1420	96	.09
FEB.			
06...	1300	112	.00
MAR.			
06...	1545	139	.01
APR.			
02...	1315	136	.01
MAY			
02...	1100	507	.02
JUNE			
05...	1200	941	.05
JULY			
09...	1330	326	.04
AUG.			
12...	1530	117	.01
SEP.			
05...	1215	130	.03

06290500 LITTLE BIGHORN RIVER BELOW PASS CREEK, NEAR WYOLA, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	499	552	547	683	629	652	665	491	432	423	499	594
2	541	565	580	693	621	712	684	438	408	425	519	619
3	525	583	550	655	618	694	657	509	366	470	557	612
4	525	576	523	717	618	695	685	500	333	461	557	596
5	523	576	548	665	598	730	666	487	346	461	530	587
6	549	586	550	670	585	695	666	452	377	442	530	591
7	549	545	583	674	624	680	718	421	408	457	524	590
8	542	556	557	622	614	680	672	402	504	457	557	582
9	534	556	572	634	627	680	655	384	504	457	539	582
10	531	556	594	634	622	699	678	386	479	457	559	588
11	560	598	603	624	637	715	740	421	448	474	574	591
12	550	608	574	612	647	727	766	443	408	462	582	595
13	558	608	584	609	637	727	772	448	370	469	604	568
14	536	595	568	580	638	699	828	475	385	469	586	588
15	541	595	553	552	638	675	808	485	341	469	594	573
16	555	575	574	602	638	675	760	461	358	473	594	582
17	549	575	584	616	638	683	721	486	350	473	576	585
18	560	571	575	639	624	767	686	504	345	478	576	573
19	541	564	384	639	637	745	653	477	354	479	573	567
20	542	573	593	646	624	727	625	468	354	478	568	577
21	---	586	575	646	624	763	609	495	363	460	559	555
22	542	564	609	646	624	725	629	495	372	453	570	546
23	542	575	596	636	613	697	629	485	388	471	570	537
24	552	585	605	651	613	695	540	478	392	472	576	571
25	561	575	603	642	640	708	465	434	392	462	586	601
26	551	575	594	642	657	750	407	390	404	402	588	581
27	568	565	594	642	680	750	420	339	404	475	596	578
28	568	575	594	642	655	730	458	344	414	481	582	602
29	560	583	602	642	---	727	501	331	423	498	596	602
30	560	575	606	632	---	712	501	365	423	498	596	608
31	551	---	618	632	---	712	---	419	---	498	596	---
MONTH	546	576	580	639	629	711	642	442	394	465	568	584
YEAR	MAX	828	MIN	331	MEAN	564						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	1.0	3.0	0.0	0.5	2.0	2.5	12.0	9.0	17.0	19.0	13.5
2	11.5	3.0	3.5	0.0	1.0	3.5	5.0	9.5	15.5	14.0	18.5	11.5
3	10.0	0.0	3.5	0.0	3.5	2.0	5.5	9.5	13.5	15.0	16.5	12.0
4	8.0	0.5	3.0	0.0	4.5	3.0	5.0	9.5	11.5	16.5	16.0	17.0
5	10.5	1.0	1.5	0.0	0.0	3.5	7.0	9.0	10.0	17.0	21.5	15.0
6	9.0	1.0	0.5	0.0	0.0	2.5	8.5	12.0	9.5	15.5	18.0	16.5
7	10.0	0.0	2.5	0.0	0.0	1.0	7.0	11.0	9.0	16.5	17.0	15.0
8	9.5	0.0	3.0	0.0	1.5	3.0	10.5	11.0	8.0	19.0	15.0	14.0
9	7.5	3.0	2.0	0.0	0.5	0.5	9.0	9.0	9.5	17.5	17.5	17.5
10	8.5	3.5	2.0	0.0	1.0	2.0	8.5	8.5	12.5	18.5	14.5	15.5
11	6.5	5.0	3.0	0.0	4.0	6.0	5.0	7.0	11.0	17.5	15.0	11.5
12	9.5	8.0	4.5	0.0	3.0	4.0	6.0	7.5	13.0	21.0	18.0	9.5
13	8.5	6.5	2.0	0.5	4.5	4.5	3.5	8.0	12.0	17.0	16.0	12.5
14	9.5	5.0	2.5	2.5	1.5	2.0	4.0	7.0	16.5	22.5	15.5	11.0
15	9.5	3.0	1.5	2.0	4.5	2.0	8.5	8.5	12.5	21.0	13.5	11.0
16	8.0	5.5	3.0	1.0	2.0	3.0	8.5	8.0	16.0	18.0	17.0	15.0
17	10.0	5.0	5.0	1.5	3.0	7.0	10.0	7.5	14.0	20.0	16.5	13.0
18	10.0	4.5	0.0	0.5	1.0	6.5	9.5	8.0	14.0	18.0	15.5	15.0
19	10.5	3.0	0.0	1.0	2.5	2.5	12.5	10.0	15.0	19.5	18.5	13.5
20	9.0	0.0	0.0	2.0	2.5	2.0	10.0	8.5	14.5	17.0	16.5	13.0
21	---	3.0	1.0	2.0	0.0	2.0	10.0	6.5	15.0	18.0	16.5	10.0
22	11.0	0.0	0.5	0.0	2.5	1.0	9.0	10.0	13.5	20.0	15.5	10.0
23	11.0	1.5	3.5	2.5	0.0	0.0	10.5	9.5	15.5	18.0	19.0	12.5
24	11.0	0.0	3.0	1.0	0.0	0.0	13.0	13.5	18.0	20.0	17.5	11.0
25	7.5	0.0	1.0	4.0	3.0	5.0	11.0	12.5	16.0	18.0	16.5	13.0
26	7.0	2.0	1.5	2.5	3.0	4.5	9.5	11.0	20.0	18.5	20.0	12.0
27	5.5	1.0	0.0	0.5	4.0	9.5	7.5	12.0	15.0	18.0	16.5	11.0
28	6.5	3.0	0.0	2.5	1.5	8.0	7.0	9.5	17.5	18.0	18.0	9.5
29	7.0	4.0	0.0	2.5	---	7.5	9.0	9.0	15.0	19.5	16.0	10.5
30	6.0	4.0	0.0	0.5	---	7.0	9.5	7.5	14.5	17.5	15.0	11.0
31	6.0	---	0.0	0.5	---	2.0	---	10.0	---	21.5	13.5	---
MONTH	9.0	2.5	2.0	1.0	2.0	3.5	8.0	9.5	13.5	18.0	17.0	13.0
YEAR	MAX	22.5	MIN	0.0	MEAN	8.0						

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT.

LOCATION.--Lat 45°44'08", long 107°33'27", in NE¼NE¼ sec.19, T.1 S., R.34 E., Big Horn County, at gaging station at bridge on Sarpy Road, 0.2 mi (0.3 km) upstream from terminal wasteway of Agency Canal, 0.6 mi (1.0 km) upstream from mouth, and 2.3 mi (3.7 km) east of Hardin.

DRAINAGE AREA.--1,294 mi² (3,351 km²).

PERIOD OF RECORD.--Chemical analyses: October 1969 to September 1974.
Water temperatures: October 1969 to September 1974.
Sediment records: October 1969 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 696 mg/l Mar. 16-31; minimum, 253 mg/l June 15-30.
Hardness: Maximum, 400 mg/l Mar. 16-31; minimum, 210 mg/l May 27-31, June 15-30.
Specific conductance: Maximum daily, 1,100 micromhos Apr. 10, 13, 14; minimum daily, 377 micromhos June 18.
Water temperatures: Maximum observed, 27.0°C July 7, 8, Aug. 18; minimum, freezing point on several days during November to January and March.
Sediment concentrations: Maximum daily, 3,240 mg/l June 9; minimum daily, 7 mg/l Oct. 29, 30.
Sediment discharge: Maximum daily, 16,200 tons (14,700 tonnes) June 9; minimum daily, 2.3 tcns (2.1 tonnes) Dec. 30.

Period of record:
Dissolved solids: Maximum, 749 mg/l Apr. 1-6, 1970; minimum, 251 mg/l June 1-20, 1972.
Hardness: Maximum, 400 mg/l Mar. 16-31, 1974; minimum, 190 mg/l Feb. 1-19, 1971.
Specific conductance: Maximum daily, 1,190 micromhos Apr. 24, 1972; minimum daily, 377 micromhos June 18, 1974.
Water temperatures: Maximum observed, 30.0°C Aug. 9, 12, 1971; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 6,460 mg/l Mar. 9, 1972; minimum daily, 7 mg/l Oct. 29, 30, 1973.
Sediment discharge: Maximum daily, 41,100 tons (37,300 tonnes) Mar. 9, 1972; minimum daily, 2.3 tons (2.1 tonnes) Dec. 30, 1973.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Flow affected by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
02-30	--	238	--	6.5	10	59	34	42	2.3	242	0	180
NOV.												
01-15	--	252	--	8.1	0	63	35	45	2.3	268	0	190
16-30	--	192	--	7.0	0	71	37	48	2.5	283	0	200
DEC.												
01-16	--	123	--	6.6	30	65	38	45	2.2	264	0	190
17-31	--	85	--	6.4	20	69	40	48	2.5	292	0	200
JAN.												
01-14	--	82	--	8.2	20	81	42	48	2.7	316	0	220
15-22	--	653	--	8.0	40	56	24	42	5.7	198	0	170
23-31	--	233	--	8.7	10	80	39	57	3.6	300	0	240
FEB.												
01-28	--	206	--	7.7	10	79	39	59	2.7	298	0	240
MAR.												
01-15	--	238	--	7.6	30	77	42	69	2.7	292	0	280
16-31	--	249	--	7.2	10	81	47	80	3.2	310	0	320
APR.												
01-14	--	298	--	9.1	10	76	46	77	3.6	294	0	270
16-30	--	503	--	11	10	68	36	54	3.4	274	0	190
MAY												
01-08	--	448	--	8.4	10	65	32	39	2.4	271	0	150
09-16	--	540	--	7.4	10	59	26	26	2.0	245	0	99
17-26	--	437	--	6.3	10	63	32	41	2.3	262	0	150
27-31	--	1210	--	9.8	10	50	20	18	2.2	206	0	79
JUNE												
01-13	--	1250	--	7.8	10	56	24	31	2.5	230	0	110
15-30	--	1200	--	7.1	50	52	19	13	1.5	222	0	50
JULY												
01-15	--	466	--	7.5	20	56	26	32	2.5	242	--	110
16-31	--	186	--	7.7	60	54	28	36	2.6	232	1	130
AUG.												
02-12	--	167	--	6.2	10	54	33	41	3.1	220	6	170
13-31	--	162	--	6.7	10	57	34	46	3.7	236	--	190
SEP.												
01-30	--	178	--	6.2	20	55	33	43	.9	233	--	170
WTD. AVG.	--	--	--	7.7	20	61	30	39	2.5	248	0	152
TIME WTD. AVG.	--	345	--	7.4	18	65	34	46	2.6	261	0	186
TOT. LOAD (TONS)	--	--	--	2590	7	20500	10100	13100	852	83400	38	50900

ANALYSES OF ADDITIONAL SAMPLES

DEC.												
03...	1100	145	.0	6.9	10	77	38	45	2.2	290	0	180
MAR.												
08...	1035	245	2.0	6.9	80	84	39	68	3.2	301	0	270
JUNE												
04...	1330	1060	19.0	6.5	20	58	22	19	1.6	229	0	81

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT.												
02-30	3.1	.2	.00	.00	446	.81	287	290	89	1.1	696	8.3
NOV.												
01-15	3.0	.2	.00	.01	479	.65	326	300	82	1.1	748	8.1
16-30	3.0	.2	.00	.01	508	.69	263	330	98	1.2	797	8.1
DEC.												
01-16	3.0	.1	.12	.01	481	.65	160	320	100	1.1	772	8.1
17-31	3.2	.2	.06	.00	514	.70	118	340	97	1.1	805	8.1
JAN.												
01-14	3.6	.3	.16	.01	562	.76	124	380	120	1.1	878	8.1
15-22	4.0	.2	.43	.03	410	.56	723	240	76	1.2	657	7.9
23-31	4.2	.3	.15	.01	581	.79	366	360	110	1.3	894	8.2
FEB.												
01-28	4.4	.4	.06	.00	579	.79	322	360	110	1.4	889	8.0
MAR.												
01-15	4.5	.2	.01	.00	627	.85	403	370	130	1.6	947	8.1
16-31	4.4	.2	.01	.01	696	.95	468	400	140	1.8	1040	8.1
APR.												
01-14	5.3	.3	.06	.01	633	.86	509	380	140	1.7	1010	8.1
16-30	3.0	.3	.02	.01	501	.68	680	320	93	1.3	815	7.9
MAY												
01-08	2.2	.2	.01	.00	433	.59	524	290	72	1.0	693	8.0
09-16	1.7	.2	.00	.00	342	.47	499	250	53	.7	567	8.2
17-26	3.4	.2	.00	.00	427	.58	504	290	74	1.1	697	8.3
27-31	1.1	.2	.07	.00	282	.38	921	210	38	.5	466	8.1
JUNE												
01-13	2.2	.2	.02	.01	347	.47	1170	240	50	.9	585	8.0
15-30	1.0	.1	.01	.01	253	.34	820	210	26	.4	436	7.8
JULY												
01-15	2.3	.2	.00	.00	356	.48	448	250	48	.9	574	--
16-31	2.5	.2	.00	.01	377	.51	189	250	58	1.0	628	--
AUG.												
02-12	3.0	.2	.00	.01	425	.58	192	270	80	1.1	680	--
13-31	3.3	.2	.00	.01	457	.62	200	280	89	1.2	819	--
SEP.												
01-30	2.8	.2	.01	.00	426	.58	205	270	82	1.1	708	--
WTD. AVG.	2.7	.2	.04	.01	418	.57	--	277	72	1.0	675	--
TIME WTD. AVG.	3.2	.2	.04	.01	474	.64	--	304	89	1.2	756	--
TOT. LOAD (TONS)	984	69	13	2.3	140000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
DEC.												
03...	3.0	.2	.13	.03	496	.67	194	350	110	1.0	777	8.1
MAR.												
08...	4.2	.4	.28	.01	626	.85	439	370	120	1.5	948	8.3
JUNE												
04...	1.4	.0	.16	.01	303	.41	867	240	48	.5	503	8.2

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L)
OCT.			
02...	1015	208	.01
NOV.			
05...	1145	193	.00
DEC.			
03...	1100	145	.02
JAN.			
03...	1045	58	.01
FEB.			
07...	1030	189	.01
MAR.			
08...	1035	245	.02
APR.			
03...	0930	223	.01
MAY			
03...	1300	391	.02
JUNE			
04...	1330	1060	.02
JULY			
10...	1330	341	.04
AUG.			
13...	1500	133	.01
SEP.			
04...	0940	156	.02

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	718	750	862	933	877	955	700	492	495	---	707
2	683	---	704	862	858	909	943	705	527	503	625	707
3	683	---	717	903	880	942	943	709	527	---	634	700
4	685	695	750	964	826	853	928	660	436	520	652	677
5	695	717	750	---	---	963	906	672	439	579	655	677
6	685	732	793	964	---	960	928	690	475	---	666	677
7	695	765	793	979	903	936	784	709	433	581	695	683
8	695	763	750	997	---	903	955	624	602	602	712	669
9	695	769	748	---	858	909	1030	569	817	576	688	669
10	685	745	---	847	856	---	1100	529	636	576	691	676
11	---	---	735	847	909	939	801	521	604	583	680	683
12	---	741	752	---	903	933	1000	520	537	603	688	683
13	633	730	752	850	861	933	1100	572	547	603	720	688
14	658	746	752	868	861	936	1100	597	---	---	703	687
15	658	763	752	687	861	960	---	579	441	603	727	692
16	669	783	748	645	856	987	1000	597	421	630	720	700
17	672	783	793	645	856	963	993	654	408	640	720	691
18	682	---	793	567	856	---	917	667	377	629	712	697
19	692	765	---	587	856	1020	903	667	395	627	712	694
20	692	765	---	646	833	1020	864	667	417	614	729	700
21	686	803	788	737	858	990	867	670	417	627	712	694
22	700	781	788	805	---	---	867	641	425	628	695	671
23	713	781	767	843	858	1030	844	730	433	613	695	671
24	683	---	---	875	909	1030	851	765	446	602	---	657
25	700	---	---	853	911	1020	849	722	452	602	709	667
26	700	781	---	---	903	1030	786	696	452	599	685	650
27	708	803	786	891	858	1030	637	573	466	600	721	684
28	716	---	825	889	858	1060	555	500	483	600	721	667
29	716	785	---	894	---	1060	598	443	461	623	726	702
30	686	785	827	894	---	---	671	424	487	625	744	718
31	---	---	827	933	---	981	---	445	---	625	726	---
MONTH	688	---	---	827	872	969	884	620	485	597	699	684
YEAR	MAX	1100	MIN	377	MEAN	733						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	4.0	3.0	0.0	1.0	3.0	11.0	15.0	16.0	24.0	---	17.0
2	13.0	---	2.5	0.0	1.0	2.5	10.0	15.5	18.0	20.0	23.0	20.0
3	13.0	---	1.0	0.0	1.0	3.0	9.0	16.0	20.0	---	26.0	16.0
4	12.0	1.0	0.5	0.0	1.0	4.0	11.0	17.0	18.0	24.0	24.0	17.0
5	13.0	0.0	0.0	---	---	2.5	11.0	18.0	16.0	25.0	21.0	18.0
6	14.0	0.0	1.5	0.0	---	2.5	9.0	17.0	13.0	---	22.0	24.0
7	13.0	0.0	1.5	0.0	1.0	3.0	10.0	17.5	12.0	27.0	24.0	20.0
8	10.0	0.0	1.5	0.0	---	3.0	12.0	16.5	13.0	27.0	20.0	20.0
9	9.0	0.0	1.5	---	1.0	4.0	14.0	16.0	13.0	24.0	21.0	20.0
10	11.0	3.0	---	0.0	1.0	---	9.0	14.0	16.0	24.0	22.0	19.0
11	---	---	3.0	0.0	2.0	7.0	10.0	14.0	20.0	22.0	22.0	14.0
12	---	5.0	3.0	---	2.5	7.0	8.0	14.0	22.0	23.0	19.0	13.0
13	12.0	5.0	2.0	0.0	2.0	6.0	5.0	12.0	24.0	23.0	19.0	13.0
14	14.0	4.5	2.0	3.0	2.0	6.0	7.0	12.5	---	---	18.0	14.0
15	13.0	5.5	1.5	3.0	1.5	6.0	---	12.0	22.0	24.0	18.0	19.0
16	15.0	5.0	1.0	2.0	1.5	6.5	13.0	14.0	21.0	24.5	20.0	17.5
17	15.0	5.0	1.0	2.0	1.5	8.5	14.0	10.0	22.0	24.5	22.0	19.0
18	15.0	---	1.0	2.0	1.5	---	15.0	12.0	23.0	25.0	27.0	20.0
19	15.0	2.0	---	1.0	1.5	8.5	16.0	10.0	24.0	25.0	21.0	19.0
20	15.0	1.0	---	1.0	1.5	5.0	12.0	9.0	22.0	25.0	19.0	15.0
21	15.0	1.5	0.0	0.5	1.5	4.0	13.0	10.0	21.0	25.0	19.0	17.0
22	14.0	2.0	1.5	0.5	---	---	16.0	13.0	22.0	25.0	20.0	18.0
23	15.0	1.5	1.5	1.0	2.5	0.0	17.0	15.0	24.0	25.0	20.0	19.0
24	12.5	---	---	1.5	2.5	3.0	20.0	19.0	24.0	24.0	26.0	19.0
25	12.0	---	---	2.0	2.5	7.0	22.0	20.0	22.0	24.0	26.0	20.0
26	10.5	0.0	---	---	2.5	8.0	20.0	21.0	22.0	22.0	20.0	17.5
27	9.0	2.5	0.5	1.0	2.5	11.0	20.0	18.0	21.0	24.0	19.0	15.5
28	10.0	---	0.5	1.0	3.0	10.0	13.0	17.0	22.0	23.0	20.0	15.5
29	9.5	3.5	---	1.0	---	10.0	13.0	13.0	23.0	23.0	20.0	13.5
30	9.0	4.0	---	0.5	---	---	16.0	12.0	26.0	25.0	18.0	14.5
31	---	---	---	1.0	---	8.0	---	12.0	---	25.0	24.0	---
MONTH	12.5	---	---	1.0	1.5	5.5	13.0	14.5	20.0	24.0	21.5	17.5
YEAR	MAX	27.0	MIN	0.0	MEAN	12.0						

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
APR.											
13...	1640	5.0	462	1760	2200	45	68	86	93	100	--
18...	1930	15.0	610	1560	2570	62	78	96	98	100	--
MAY											
03...	1450	14.5	565	318	468	41	60	85	92	100	--
JUNE											
04...	1320	19.0	1050	736	2090	29	48	81	93	99	100
11...	1110	--	1260	1020	3470	33	52	78	90	99	100

YELLOWSTONE RIVER BASIN

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	220	25	15	261	12	8.5	190	66	34
2	220	31	18	275	16	12	170	86	39
3	215	22	13	266	14	10	145	69	27
4	225	19	12	257	14	9.7	140	65	25
5	229	21	13	205	34	19	130	72	25
6	231	27	17	180	33	16	120	82	27
7	231	24	15	190	48	25	115	74	23
8	232	23	14	210	87	49	115	81	25
9	236	23	15	230	148	92	110	54	16
10	239	29	19	250	157	106	110	49	15
11	244	28	18	280	141	107	105	58	16
12	243	22	14	298	140	113	105	85	24
13	235	26	16	298	109	88	105	82	23
14	239	26	17	298	98	79	105	83	24
15	239	29	19	284	92	71	105	96	27
16	235	27	17	266	57	41	100	63	17
17	235	22	14	257	51	35	100	100	27
18	235	22	14	257	54	37	95	91	23
19	239	17	11	252	45	31	90	90	22
20	239	17	11	190	35	18	80	118	25
21	243	20	13	170	73	34	85	184	42
22	243	17	11	160	63	27	90	150	36
23	248	19	13	140	56	21	95	123	32
24	257	21	15	130	62	22	100	107	29
25	243	13	8.5	140	64	24	95	65	17
26	248	12	8.0	160	72	31	85	37	8.5
27	248	12	8.0	170	83	38	80	24	5.2
28	248	10	6.7	180	85	41	75	17	3.4
29	248	7	4.7	200	74	40	70	15	2.8
30	248	7	4.7	210	74	42	70	12	2.3
31	252	18	12	--	--	--	65	14	2.5
TOTAL	7387	--	486.6	6664	--	1287.2	3245	--	664.7

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	65	16	2.8	110	108	32	226	244	149
2	60	17	2.8	130	92	32	239	328	212
3	58	30	4.7	150	130	53	270	328	239
4	55	70	10	230	123	76	284	269	206
5	55	65	9.7	214	109	63	243	176	115
6	50	50	6.8	214	74	43	243	143	94
7	55	49	7.3	201	74	40	248	168	112
8	60	56	9.1	201	99	54	243	134	88
9	70	40	7.6	190	180	92	226	109	67
10	80	66	14	226	260	159	209	113	64
11	90	54	13	252	304	207	201	109	59
12	100	51	14	261	316	223	209	80	45
13	151	50	20	239	248	160	230	67	42
14	205	80	44	252	236	161	248	76	51
15	310	500	419	252	453	308	248	76	51
16	1120	1800	5440	222	372	223	226	59	36
17	960	2350	6090	230	397	247	214	281	162
18	851	630	1450	230	446	277	230	189	117
19	680	400	734	226	589	359	307	342	310
20	524	280	396	235	967	614	326	260	229
21	424	220	252	222	719	431	275	268	199
22	355	372	357	181	486	237	230	300	186
23	278	205	154	151	434	177	218	388	228
24	278	195	146	141	211	80	201	236	128
25	260	103	72	151	223	91	190	168	86
26	274	75	55	214	273	158	230	116	72
27	247	145	97	226	221	135	248	156	104
28	260	240	168	214	185	107	266	186	134
29	247	185	123	--	--	--	288	172	134
30	150	122	49	--	--	--	284	156	120
31	100	94	25	--	--	--	252	144	98
TOTAL	8472	--	16192.8	5765	--	4839	7552	--	3937

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	235	120	76	457	328	405	1240	1310	4390
2	230	140	87	421	328	373	1030	1000	2780
3	226	84	51	457	359	443	954	783	2020
4	226	52	32	469	351	444	1030	1350	3750
5	218	64	38	445	343	412	1170	1300	4110
6	209	60	34	409	273	301	1220	810	2670
7	230	64	40	433	211	247	1230	1060	3520
8	261	132	93	494	406	542	1390	1300	4880
9	279	167	126	585	429	678	1850	3240	16200
10	252	151	103	643	499	866	1590	2420	10400
11	252	137	93	662	468	837	1240	1440	4820
12	421	763	871	584	398	628	1140	959	2950
13	494	1090	1450	496	306	410	1170	986	3110
14	637	741	1270	470	230	292	1280	1080	3730
15	572	796	1230	458	179	221	1450	1360	5320
16	540	1370	2000	421	176	200	1520	1350	5540
17	533	811	1170	402	144	156	1550	1380	5780
18	592	1030	1650	372	105	105	1570	1500	6360
19	540	1190	1740	366	117	116	1580	1580	6740
20	494	858	1140	415	125	140	1500	1320	5350
21	445	725	871	482	220	286	1400	1320	4990
22	391	605	639	495	187	250	1320	1040	3710
23	356	437	420	451	218	265	1210	1010	3300
24	328	328	290	420	205	232	1100	966	2870
25	350	374	353	450	214	260	1000	870	2350
26	457	507	626	519	400	561	927	794	1990
27	637	959	1650	656	689	1220	866	797	1860
28	715	920	1780	1010	1650	4500	809	634	1380
29	637	608	1050	1340	3080	11100	742	414	829
30	527	351	499	1590	3170	13600	683	550	1010
31	--	--	--	1470	1840	7300	--	--	--
TOTAL	12284	--	21472	18342	--	47390	36761	--	128709

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	650	450	790	162	76	33	168	23	10
2	559	380	574	160	60	26	191	45	23
3	605	670	1090	156	58	24	216	93	54
4	761	1000	2050	153	62	26	207	89	50
5	665	480	862	159	78	33	208	68	38
6	541	420	613	152	80	33	203	59	32
7	486	300	394	158	55	23	190	64	33
8	492	340	452	162	61	27	188	50	25
9	438	310	367	182	65	32	157	53	22
10	375	280	284	188	65	33	156	88	37
11	335	220	199	178	45	22	169	124	57
12	297	235	188	186	58	29	179	53	26
13	280	200	151	177	51	24	216	55	32
14	258	220	153	176	61	29	200	60	32
15	245	245	162	175	55	26	189	70	36
16	204	215	118	197	58	31	176	40	19
17	199	155	83	191	40	21	162	38	17
18	189	175	89	181	41	20	185	35	17
19	185	270	135	184	40	20	162	39	17
20	201	213	116	170	45	21	166	58	26
21	204	245	135	171	47	22	172	54	25
22	204	180	99	178	56	27	170	36	17
23	195	155	82	168	54	24	169	34	16
24	187	155	78	155	49	21	169	32	15
25	185	110	55	136	40	15	167	30	14
26	206	120	67	134	38	14	158	36	15
27	187	88	44	134	30	11	165	40	18
28	152	60	25	125	29	9.8	174	44	21
29	160	55	24	135	32	12	173	33	15
30	162	53	23	145	30	12	168	36	16
31	159	67	29	155	22	9.2	--	--	--
TOTAL	9966	--	9531	5083	--	710.0	5373	--	775

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	126094
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	235914.7

06294700 BIGHORN RIVER AT BIGHORN, MT.
(Irrigation network station)

LOCATION.--Lat 46°08'50", long 107°28'00", in NE¼NE¼ sec.33, T.5 N., R.34 E., Treasure County, at gaging station at bridge on old U.S. Highway 10, 0.3 mi (0.5 km) downstream from bridge on Interstate Highway 94, 0.7 mi (1.1 km) upstream from mouth, 1.3 mi (2.1 km) southwest of Bighorn, and 4.4 mi (7.1 km) east of Custer.

DRAINAGE AREA.--22,885 mi² (59,272 km²).

PERIOD OF RECORD.--Chemical analyses: November 1945 to August 1947 (monthly), August 1948 (monthly), March 1949 to December 1950 (monthly), January 1951 to December 1969 (daily), January 1970 to September 1974 (monthly).
Water temperatures: April 1949 to September 1951, August 1952 to November 1958, June 1959 to September 1974. Maximum temperature of 31.5°C on Aug. 7, 1953, published in WSP 1291 and subsequent publications, has been found to be incorrect and should not be used.
Sediment records: May 1946 to June 1947 (monthly), July 1947 to September 1954 (daily), October 1955 to September 1958 (daily), October 1959 to June 1972 (daily).
Prior to October 1948, published as "near Custer."

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 1,020 micromhos Sept. 21; minimum daily, 567 micromhos Aug. 27, 28, 30.
Water temperatures: Maximum, 23.5°C Aug. 6; minimum, freezing point on many days during December to February.

Period of record:
Specific conductance (1951-74): Maximum daily, 1,940 micromhos July 10, 1961; minimum daily, 384 micromhos June 20, 1951.
Water temperatures (1949-51, 1952-74): Maximum observed, 30.0°C July 17, 18, 1953; minimum, freezing point on many days during winter periods.

REMARKS.--Temperature recorder installed May 2. Flow regulated by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT.												
03...	1450	5970	12.5	11	10	77	25	92	4.7	210	0	310
NOV.												
15...	1005	5830	7.0	11	10	77	27	81	3.6	207	0	290
DEC.												
04...	0945	1900	2.5	8.6	10	87	32	86	3.9	206	0	330
JAN.												
08...	1205	3500	.0	9.6	20	92	26	95	3.8	211	1	320
FEB.												
04...	1050	3650	2.5	9.6	50	81	29	84	4.1	216	0	300
MAR.												
05...	1230	4960	4.5	9.5	70	75	28	87	3.9	210	0	290
APR.												
01...	1000	5230	8.0	9.9	20	80	31	85	4.3	210	6	300
30...	1100	6950	9.0	9.7	30	85	30	81	3.9	231	0	300
JUNE												
04...	1700	7900	14.0	8.8	260	80	28	72	5.2	223	--	280
24...	1000	6270	19.0	6.9	20	77	27	66	3.3	214	--	250
JULY												
22...	1500	3740	21.5	11	80	60	23	61	3.6	180	--	210
AUG.												
26...	1045	3470	19.5	9.7	80	48	17	46	3.0	149	--	160
SEP.												
24...	1000	2900	15.0	6.4	20	65	26	74	3.2	173	4	250

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
03...	11	.5	.30	.05	637	.87	10300	300	120	2.3	982	8.3
NOV.												
15...	11	.3	.39	.00	605	.82	9520	300	130	2.0	986	8.3
DEC.												
04...	12	.5	.18	.01	671	.91	3440	350	170	2.0	988	8.5
JAN.												
08...	14	.5	.32	.01	667	.91	6300	340	160	2.3	957	8.4
FEB.												
04...	11	.4	.33	.02	627	.85	6180	320	140	2.0	950	8.2
MAR.												
05...	11	.5	.30	.01	609	.83	8160	300	120	2.1	961	8.3
APR.												
01...	12	.4	.28	.02	639	.87	9020	340	160	2.0	970	8.5
30...	12	.8	.29	.01	638	.87	12000	340	150	1.9	946	8.4
JUNE												
04...	14	.4	.24	.01	600	.82	12800	320	130	1.8	890	8.0
24...	11	.8	.10	.00	548	.75	9280	300	130	1.6	840	8.2
JULY												
22...	7.6	.3	.07	.00	468	.64	4730	250	100	1.7	740	7.9
AUG.												
26...	6.1	.3	.20	.00	365	.50	3420	190	68	1.5	580	8.1
SEP.												
24...	10	.4	.01	.01	524	.71	4100	270	120	2.0	910	8.0

06294700 BIGHORN RIVER AT BIGHORN, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	AIR TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	SUSPENDED SOLIDS (MG/L)
APR.												
01...	1500	17.0	11.8	109	.62	.29	.09	.34	.28	.02	1.9	35
30...	1100	20.0	10.9	104	.90	.41	.19	.60	.30	.12	1.7	117
JUNE												
04...	1700	21.0	9.4	100	1.3	1.1	.04	1.1	.24	.11	2.4	154
24...	1100	31.0	8.8	104	.77	.45	.14	.59	.18	.14	1.0	141
JULY												
22...	1100	32.5	8.0	100	--	--	--	--	.40	.02	1.2	74
AUG.												
26...	1045	21.0	7.6	92	1.0	.62	.17	.79	.21	.14	.9	91
SEP.												
24...	1000	15.5	9.1	100	.66	.56	.04	.60	.06	.03	1.2	14

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL FLUORIDE (F) (MG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.									
01...	1500	800	460	10	.9	.8	<100	1	80

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	944	---	946	---	909	907	942	930	894	860	648	590
2	947	906	932	967	909	907	942	933	903	860	651	602
3	947	909	935	967	911	923	942	933	903	838	662	627
4	968	906	961	961	911	923	945	933	897	850	670	659
5	956	904	932	964	911	923	945	930	894	878	665	674
6	965	883	932	964	941	944	945	930	872	860	667	691
7	965	878	944	944	917	920	939	930	872	843	671	705
8	965	878	917	944	917	920	968	945	848	818	665	721
9	965	878	915	941	947	933	968	925	933	836	671	739
10	965	878	915	944	915	944	963	903	930	816	664	739
11	965	868	941	973	915	950	963	903	903	816	664	758
12	965	883	941	---	939	970	969	903	921	796	654	758
13	953	909	915	---	917	970	990	903	921	786	648	761
14	953	888	917	944	912	970	990	908	900	756	639	781
15	924	893	917	878	902	950	1000	908	872	754	626	797
16	947	896	915	---	902	953	996	925	845	751	626	797
17	947	901	917	843	902	970	975	927	825	753	626	797
18	947	901	902	823	915	967	975	930	825	736	620	797
19	933	917	902	843	915	970	963	913	825	736	615	819
20	944	934	941	865	912	973	968	927	821	717	614	812
21	1020	909	941	887	912	976	939	927	818	717	591	812
22	947	909	920	897	904	973	939	962	823	718	585	812
23	927	931	897	904	915	950	939	962	843	713	620	797
24	924	909	941	941	915	973	939	950	846	695	592	802
25	918	936	941	935	911	976	939	945	846	702	589	809
26	916	936	941	935	911	976	925	922	872	686	572	---
27	916	936	914	935	911	973	912	903	864	683	567	800
28	953	912	914	935	911	973	917	930	872	678	567	800
29	916	934	889	935	---	979	909	875	880	664	575	869
30	916	934	935	941	---	976	917	875	894	656	567	833
31	916	---	1000	938	---	976	---	875	---	646	569	---
MONTH	946	905	928	924	915	956	950	922	872	762	624	757
YEAR	MAX	1020	MIN	567	MEAN	871						

06294700 BIGHORN RIVER AT BIGHORN, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY MEASUREMENT)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	---	4.0	0.0	0.0	5.0	7.5	7.5	---	---	---	---
2	14.0	7.0	3.5	0.0	0.0	5.0	7.0	---	---	---	---	---
3	12.0	7.0	3.5	0.0	1.0	3.0	5.0	---	---	---	---	---
4	14.0	7.5	3.0	0.0	4.0	3.5	4.5	---	---	---	---	---
5	12.5	6.5	1.5	0.0	2.5	4.0	4.5	---	---	---	---	---
6	14.0	7.0	0.5	0.0	0.0	3.5	4.5	---	---	---	---	---
7	13.0	5.0	3.5	0.0	0.5	1.5	5.0	---	---	---	---	---
8	13.0	6.0	4.0	0.0	1.5	3.0	5.5	---	---	---	---	---
9	11.5	7.0	3.5	0.0	2.0	1.0	6.0	---	---	---	---	---
10	11.5	10.0	2.0	0.0	3.0	2.0	8.0	---	---	---	---	---
11	13.0	10.0	3.5	0.0	2.5	4.5	6.0	---	---	---	---	---
12	12.5	10.0	5.0	---	2.5	4.5	5.5	---	---	---	---	---
13	11.5	9.5	3.5	---	3.0	4.0	4.0	---	---	---	---	---
14	14.0	9.5	3.5	0.5	2.5	2.0	4.0	---	---	---	---	---
15	14.0	9.0	3.5	0.0	3.0	2.0	5.0	---	---	---	---	---
16	13.0	7.0	4.0	2.0	4.0	2.5	8.0	---	---	---	---	---
17	13.0	9.0	5.0	2.0	5.0	4.0	7.0	---	---	---	---	---
18	12.0	4.0	3.0	0.5	4.0	6.5	7.0	---	---	---	---	---
19	13.0	6.0	1.0	2.0	5.0	4.0	8.5	---	---	---	---	---
20	12.0	3.5	0.0	2.5	2.5	1.0	8.0	---	---	---	---	---
21	12.0	5.5	0.0	2.0	2.0	1.5	7.0	---	---	---	---	---
22	12.5	6.0	2.5	1.5	2.5	0.5	7.0	---	---	---	---	---
23	12.5	4.0	5.0	2.0	2.0	0.5	8.0	---	---	---	---	---
24	13.0	5.0	3.5	2.0	1.5	1.5	9.0	---	---	---	---	---
25	12.0	7.0	3.5	2.5	1.0	3.0	9.5	---	---	---	---	---
26	10.0	4.5	2.5	3.0	2.0	4.0	10.0	---	---	---	---	---
27	9.0	3.0	2.0	1.5	4.0	5.5	9.5	---	---	---	---	---
28	8.5	4.0	1.0	2.5	5.0	7.0	7.5	---	---	---	---	---
29	10.5	4.0	0.5	2.0	---	4.5	5.5	---	---	---	---	---
30	9.5	4.5	0.0	1.0	---	5.0	8.0	---	---	---	---	---
31	10.0	---	0.0	0.0	---	5.0	---	---	---	---	---	---
MONTH	12.0	6.5	2.5	1.0	2.5	3.5	5.5	---	---	---	---	---

YEAR MAX 15.0 MIN 0.0 MEAN 5.0

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	---	---	11.5	9.5	16.5	16.0	22.0	21.0	17.0	16.5
2	---	---	10.0	9.0	13.0	11.0	16.0	16.0	21.5	20.5	16.5	15.0
3	---	---	10.5	8.0	13.5	12.0	16.5	15.5	21.5	20.0	18.0	15.5
4	---	---	11.0	8.5	13.5	12.0	18.0	16.5	22.0	20.5	18.5	16.0
5	---	---	11.5	9.0	12.0	11.5	18.0	17.0	23.0	20.5	19.5	18.5
6	---	---	11.5	10.0	12.0	10.5	18.0	17.0	23.5	21.0	19.5	18.0
7	---	---	11.5	10.0	12.0	11.0	18.5	17.0	23.0	20.5	19.0	18.0
8	---	---	11.5	10.5	11.5	10.5	19.5	18.5	20.5	19.5	19.0	18.0
9	---	---	11.0	9.5	13.0	11.0	20.0	19.0	19.5	18.5	19.5	18.0
10	---	---	11.0	10.0	13.5	13.0	19.5	19.0	20.5	18.0	19.5	17.0
11	---	---	10.0	8.5	14.0	12.0	19.5	18.5	20.0	19.5	17.0	15.0
12	---	---	10.0	9.0	15.0	13.5	19.5	18.5	20.5	19.0	15.0	14.5
13	---	---	10.0	7.0	15.5	14.0	20.0	18.5	20.5	19.5	16.0	14.0
14	---	---	8.5	5.5	15.5	14.5	20.5	19.0	20.5	19.0	17.0	15.0
15	---	---	9.5	7.0	16.0	15.0	20.5	19.5	19.5	18.0	17.0	15.5
16	---	---	9.5	6.0	16.5	15.0	21.0	20.0	20.5	18.5	18.0	16.0
17	---	---	9.0	8.0	17.0	15.5	22.0	20.0	21.0	19.0	18.0	16.0
18	---	---	8.5	7.0	17.0	16.0	22.0	21.0	21.5	19.5	18.0	16.0
19	---	---	9.0	9.0	17.0	16.0	22.0	21.0	21.0	20.0	17.0	16.0
20	---	---	9.0	8.0	18.0	16.0	21.5	21.0	21.0	18.5	16.5	15.5
21	---	---	8.0	7.0	18.5	16.5	22.0	21.0	19.5	18.0	16.0	14.5
22	---	---	10.5	8.0	17.0	16.0	23.0	21.0	20.5	18.5	16.0	14.5
23	---	---	11.5	9.0	18.0	16.5	22.0	20.5	21.0	19.5	16.0	14.0
24	---	---	12.0	10.5	18.5	17.0	22.0	21.0	21.0	20.0	16.5	15.0
25	---	---	13.0	11.5	18.5	18.0	22.0	20.5	21.0	20.0	16.5	15.0
26	---	---	13.0	11.0	18.0	16.5	22.0	20.5	21.0	19.5	16.5	15.5
27	---	---	13.0	12.0	17.0	16.0	22.0	20.5	20.5	19.0	16.0	[illegible]
28	---	---	13.0	11.5	16.5	16.0	22.0	20.5	19.5	19.0	14.0	13.5
29	---	---	11.5	10.0	17.0	16.5	22.0	20.5	20.0	18.5	14.0	13.5
30	---	---	10.5	10.0	16.5	16.0	22.0	21.0	19.0	18.0	14.0	12.0
31	---	---	10.5	9.5	---	---	22.0	20.5	18.0	17.0	---	---
MONTH	---	---	13.0	5.5	18.5	9.5	23.0	15.5	23.5	17.0	19.5	12.0
YEAR	23.5	5.5										

06294840 YELLOWSTONE RIVER AT MYERS, MT.

LOCATION.--Lat 46°15'06", long 107°20'55", in SW¼SW¼SE¼ sec.21, T.6 N., R.35 E., Treasure County, at bridge on county road, 11.5 mi (18.5 km) downstream from Bighorn River, 0.4 mi (0.6 km) northwest of Myers and at mile 267.9 (431.1 km).

DRAINAGE AREA.--37,674 mi² (97,576 km²).

PERIOD OF RECORD.--Chemical analyses: April to September 1974.

REMARKS.--The water discharge is measured or computed by adding the discharge of Yellowstone River at Billings, Mt. (station 06214500) to that of Bighorn River at Bighorn, Mt. (station 06294700). Flow affected by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
APR.											
01...	1900	8970	11	13	68	23	63	4.2	199	0	220
30...	1430	14700	12	20	53	19	48	3.0	168	--	170
MAY											
28...	1200	21220	13	10	39	13	31	2.6	137	--	100
JUNE											
24...	1400	57200	11	10	24	7.2	16	1.7	88	--	49
JULY											
22...	1500	18400	11	0	29	11	24	2.5	108	--	74
AUG.											
26...	1415	10900	11	20	39	15	36	3.0	149	--	95
SEP.											
24...	1230	8100	8.7	0	49	20	51	3.8	162	3	160

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CARBON DIOXIDE (CO2) (MG/L)	TOTAL FLUORIDE (F) (MG/L)	SUSPENDED SOLIDS (MG/L)
APR.											
01...	9.6	.6	498	.68	12100	260	100	1.7	1.8	.9	50
30...	7.6	.7	395	.54	15700	210	74	1.4	1.7	--	126
MAY											
28...	5.9	.5	273	.37	15600	150	39	1.1	3.5	--	534
JUNE											
24...	3.1	.6	156	.21	24100	90	17	.7	1.1	--	422
JULY											
22...	3.8	.3	208	.28	10300	120	31	1.0	1.3	.4	63
AUG.											
26...	5.7	.4	279	.38	8210	160	37	1.2	1.9	--	100
SEP.											
24...	7.7	.4	383	.52	8380	200	67	1.6	1.1	--	13

DATE	TIME	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
APR.								
01...	1900	.73	.40	.09	.49	.24	.06	3.1
30...	1430	--	.36	.07	.43	--	.18	1.5
MAY								
28...	1200	2.0	1.7	.14	1.8	.19	--	3.4
JUNE								
24...	1400	1.1	.87	.09	.96	.09	.54	.9
JULY								
22...	1500	.64	.33	.07	.40	.24	.18	1.4
AUG.								
26...	1415	--	--	.05	--	.31	.03	.8
SEP.								
24...	1230	.61	.52	.03	.55	.06	.04	1.7

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.							
01...	1900	--	330	--	--	4	--
JULY							
22...	1500	1900	110	50	<100	0	30

06294840 YELLOWSTONE RIVER AT MYERS, MT.--Continued

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)
APR.								
01...	1900	8.0	14.0	770	11.4	105	8.3	163
30...	1430	11.5	21.0	618	10.3	104	8.2	136
MAY								
28...	1200	14.5	11.0	455	8.2	88	7.8	112
JUNE								
24...	1400	19.0	30.5	265	8.4	98	8.1	72
JULY								
22...	1500	23.5	34.5	350	7.9	102	8.1	87
AUG.								
26...	1415	21.0	23.5	470	7.6	94	8.1	122
SEP.								
24...	1230	15.0	20.5	655	9.3	101	8.4	138

06295000 YELLOWSTONE RIVER AT FORSYTH, MT.

LOCATION.--Lat 46°15'53", long 106°41'43", in SE¼NE¼NE¼ sec.22, T.6 N., R.40 E., Rosebud County, at site of former gaging station, at bridge on State Highway 12, 1.4 mi (2.3 km) downstream from Smith Creek, and 0.7 mi (1.1 km) northwest of Forsyth.

DRAINAGE AREA.--40,339 mi² (104,478 km²).

PERIOD OF RECORD.--Chemical analyses: April to September 1974.

REMARKS.--The water discharge is measured or computed by adding the discharge of Yellowstone River at Billings, Mt. (station 06214500) to that of Bighorn River at Bighorn, Mt. (station 06294700). Flow affected by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
APR.											
02...	1030	8570	11	13	67	24	68	4.1	202	0	220
30...	2000	14800	13	10	49	17	43	2.9	162	--	150
MAY											
28...	1600	21200	12	19	41	15	37	2.7	145	--	120
JUNE											
24...	1700	57200	11	300	23	6.5	16	1.7	87	--	46
JULY											
23...	0845	19000	11	0	28	10	24	2.6	106	--	76
AUG.											
26...	1730	11400	12	20	39	14	37	3.1	151	--	110
SEP.											
26...	0930	7900	8.6	10	45	18	61	3.2	158	5	150

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	TOTAL FLUO-RIDE (F) (MG/L)	SUS-PENDED SOLIDS (MG/L)
APR.											
02...	9.9	.5	504	.69	11700	270	100	1.8	2.0	1.0	38
30...	6.8	.5	362	.49	14500	190	59	1.4	2.1	--	155
MAY											
28...	6.1	.4	306	.42	17500	160	45	1.3	2.3	--	295
JUNE											
24...	3.2	.2	151	.21	23300	84	13	.8	3.5	.3	455
JULY											
23...	3.8	.3	208	.28	10700	110	24	1.0	1.1	--	122
AUG.											
26...	6.8	.4	296	.40	9430	160	31	1.3	2.4	--	135
SEP.											
26...	7.7	.5	367	.50	7830	190	49	1.6	.9	--	12

06295000 YELLOWSTONE RIVER AT FORSYTH, MT.--Continued

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	TOTAL NITRO-GEN (N) (MG/L)	ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)
APR.									
02...	1030	.90	.49	.13	.62	.28	.08	.01	2.0
30...	2000	--	.28	.09	.37	--	.19	--	1.8
MAY									
28...	1600	.64	.35	.13	.48	.16	.26	--	2.4
JUNE									
24...	1700	.80	.52	.10	.62	.18	.55	--	1.0
JULY									
23...	0845	.78	.46	.10	.56	.22	.12	--	.6
AUG.									
26...	1730	.94	.59	.14	.73	.21	.16	--	.7
SEP.									
26...	0930	.49	.41	.02	.43	.06	.01	--	1.7

DATE	TIME	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.								
02...	1030	1100	290	<10	<100	.0	4	50
JUNE								
24...	1700	12000	120	40	<100	.7	4	70

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)
APR.								
02...	1030	6.0	9.0	786	10.8	95	8.2	166
30...	2000	13.0	21.0	580	9.8	102	8.1	133
MAY								
28...	1600	16.0	15.5	500	8.0	89	8.0	119
JUNE								
24...	1700	20.0	32.0	245	7.8	94	7.6	71
JULY								
23...	0845	22.5	23.0	435	7.5	95	8.2	87
AUG.								
26...	1730	22.0	29.0	580	7.7	96	8.0	124
SEP.								
26...	0930	15.0	15.0	675	8.7	95	8.5	138

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT.

LOCATION.--Lat 46°23'51", long 105°53'36", in SE¼SW¼ sec.31, T.8 N., R.47 E., Custer County, at Keogh Bridge, 1.6 mi (2.6 km) upstream from Tongue River, and 2 mi (3.2 km) west of Miles City.

DRAINAGE AREA.--42,847 mi² (110,974 km²).

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1974.
Water temperatures: October 1968 to September 1974.

EXTREMES.--1973-74:
Dissolved solids: Maximum, 627 mg/l Jan. 1-15; minimum, 175 mg/l June 15-30.
Hardness: Maximum, 330 mg/l Jan. 1-15; minimum, 110 mg/l June 15-30.
Specific conductance: Maximum daily, 981 micromhos Jan. 8, 9; minimum daily, 246 micromhos June 22.
Water temperatures: Maximum, 26.5°C July 19; minimum, freezing point on many days during December to February.

Period of record:
Dissolved solids: Maximum, 627 mg/l Jan. 1-15, 1974; minimum, 174 mg/l June 1-18, 1972.
Hardness: Maximum, 330 mg/l Jan. 1-15, 1974; minimum, 97 mg/l June 1-17, 1969, July 6-15, 1971.
Specific conductance: Maximum daily, 1,030 micromhos Jan. 10, 1970; minimum daily, 226 micromhos May 30, 1969.
Water temperatures: Maximum, 26.5°C Aug. 8, 1971, July 19, 1974; minimum, freezing point on many days during winter periods.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples were collected for more comprehensive definition of water quality at this station. Water discharge computed by subtracting the discharge of Tongue River at Miles City, Mt. (station 06308500) from that of Yellowstone River at Miles City, Mt. (station 06309000). Flow affected by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT.												
01-31	--	9590	--	8.6	10	60	22	64	3.6	184	0	210
NOV.												
01-12	--	11200	--	11	30	63	22	66	3.8	194	0	230
13-30	--	9740	--	12	0	61	22	63	3.6	191	0	210
DEC.												
01-21	--	7010	--	9.8	20	60	22	59	3.7	192	0	200
22-31	--	6850	--	9.9	20	63	24	61	3.8	195	0	220
JAN.												
01-15	--	3550	--	12	20	82	30	82	4.8	243	0	280
16-31	--	8490	--	12	160	58	21	56	4.4	176	0	200
FEB.												
01-28	--	7200	--	12	10	66	24	66	3.7	202	0	230
MAR.												
01-16	--	7790	--	10	10	72	26	69	3.4	207	0	250
17-31	--	8500	--	11	10	69	26	67	3.8	206	0	250
APR.												
01-20	--	9640	--	13	10	69	24	69	4.5	204	0	230
21-30	--	12900	--	16	10	62	20	55	3.9	193	0	170
MAY												
01-08	--	12300	--	15	10	53	19	45	3.4	172	0	160
09-21	--	12700	--	14	10	47	16	40	3.1	155	0	140
22-31	--	18800	--	18	10	50	15	42	3.3	163	0	130
JUNE												
01-14	--	36200	--	13	20	37	12	29	2.4	128	0	84
15-30	--	60100	--	12	10	30	8.3	16	2.6	110	0	49
JULY												
01-15	--	41500	--	11	20	32	9.4	29	2.3	113	--	79
16-31	--	20600	--	11	40	32	12	32	2.6	120	--	86
AUG.												
01-11	--	11700	--	9.8	0	34	12	31	3.1	128	--	92
12-20	--	10500	--	10	40	36	13	34	3.3	142	--	100
21-31	--	11000	--	13	20	40	13	38	3.3	151	--	110
SEP.												
01-15	--	9150	--	11	0	44	15	43	1.4	162	--	120
16-30	--	8180	--	9.1	10	50	16	50	2.1	173	--	140
WTD. AVG.	--	--	--	12	19	46	15	41	3.0	151	--	131
TIME WTD. AVG.	--	14400	--	12	20	54	19	52	3.4	174	--	173
TOT. LOAD (TONS)	--	--	--	168000	268	648000	218000	583000	43000	2147000	--	1866000

ANALYSES OF ADDITIONAL SAMPLES

DEC.												
06...	1400	7460	.0	9.7	20	58	22	55	3.6	183	7	180
FEB.												
12...	1430	8530	1.0	11	30	64	23	63	3.5	193	0	210
MAR.												
07...	1200	7880	1.0	9.4	100	65	25	74	3.9	205	0	250
19...	1100	8000	4.5	9.0	20	72	27	76	4.3	203	2	250
APR.												
05...	1100	8680	9.5	11	470	65	24	68	4.0	201	0	230
MAY												
01...	1300	14800	15.0	12	0	53	18	43	3.1	162	0	140
31...	1030	40200	13.0	12	--	40	9.7	25	2.3	116	--	85
JUNE												
26...	1000	58400	19.5	11	--	28	7.6	17	1.7	90	--	49
JULY												
23...	1430	19900	24.5	11	1800	33	12	27	2.7	116	0	82
AUG.												
27...	1230	10600	20.5	12	930	38	16	39	2.7	153	--	110
SEP.												
25...	0930	7860	14.5	8.5	130	50	19	52	3.3	162	5	150

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
01-31	9.7	.5	.08	.02	470	.64	12200	240	89	1.8	727	8.0
NOV.												
01-12	9.8	.5	.26	.02	503	.68	15200	250	89	1.8	764	8.0
13-30	9.6	.4	.21	.01	477	.65	12500	240	86	1.8	743	8.0
DEC.												
01-21	10	.4	.13	.00	460	.63	8710	240	83	1.7	718	8.1
22-31	11	.4	.22	.00	490	.67	9060	260	96	1.7	755	8.1
JAN.												
01-15	14	.6	.44	.00	627	.85	6010	330	130	2.0	969	8.3
16-31	10	.4	.46	.01	451	.61	10300	230	87	1.6	707	7.9
FEB.												
01-28	9.1	.6	.06	.01	511	.70	9930	260	98	1.8	787	7.6
MAR.												
01-16	11	.4	.06	.01	544	.74	11400	290	120	1.8	839	7.9
17-31	11	.4	.14	.01	540	.73	12400	280	110	1.7	828	7.9
APR.												
01-20	10	.4	.06	.00	521	.71	13600	270	100	1.8	829	7.9
21-30	8.8	.4	.00	.00	431	.59	15000	240	79	1.6	710	7.7
MAY												
01-08	8.0	.4	.00	.00	389	.53	12900	210	70	1.4	608	7.6
09-21	7.2	.3	.01	.00	344	.47	11800	180	56	1.3	542	7.9
22-31	7.7	.3	.15	.01	347	.47	17600	190	53	1.3	554	7.5
JUNE												
01-14	4.3	.3	.00	.01	245	.33	23900	140	37	1.1	408	7.6
15-30	3.0	.2	.01	.01	175	.24	28400	110	19	.7	293	7.7
JULY												
01-15	4.1	.3	.00	.00	223	.30	25000	120	26	1.2	362	--
16-31	4.7	.3	.01	.01	240	.33	13300	130	31	1.2	386	--
AUG.												
01-11	5.2	.4	.00	.01	251	.34	7930	130	29	1.2	412	--
12-20	5.3	.4	.00	.02	272	.37	7710	140	27	1.2	446	--
21-31	5.7	.4	.15	.01	299	.41	8880	150	30	1.3	490	--
SEP.												
01-15	5.9	.4	.03	.01	321	.44	7930	170	39	1.4	530	--
16-30	6.5	.4	.00	.01	359	.49	7930	190	49	1.6	600	--
WTD. AVG.	6.5	.3	.06	.01	330	.45	--	177	53	1.3	526	--
TIME WTD. AVG.	8.2	.4	.11	.01	409	.56	--	214	72	1.5	645	--
TOT. LOAD (TONS)	92000	4930	890	116	4686000	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
DEC.												
06...	9.2	.5	.17	.02	436	.59	8120	240	74	1.6	681	8.4
FEB.												
12...	10	.5	.35	.01	482	.66	11500	250	96	1.7	762	8.0
MAR.												
07...	9.3	.6	.23	.02	539	.73	11500	270	97	2.0	828	7.8
19...	12	.5	.20	.01	554	.77	11800	290	120	1.9	857	8.4
APR.												
05...	10	.7	.28	.02	514	.71	12300	260	96	1.8	800	8.2
MAY												
01...	7.5	.9	.32	.00	359	.50	14600	210	74	1.3	566	8.2
31...	4.8	.2	.22	.01	237	.31	25000	140	45	.9	365	7.8
JUNE												
26...	3.8	.4	.08	.00	163	.22	25900	100	27	.7	274	7.9
JULY												
23...	4.0	.3	.05	.00	231	.30	11800	130	37	1.0	385	8.4
AUG.												
27...	5.8	.4	.20	.01	301	.41	8560	160	35	1.3	480	7.9
SEP.												
25...	7.7	.5	.02	.01	376	.50	7830	200	62	1.6	660	8.7

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.									
05...	1100	--	20	1100	<100	50	--	2	100
JUNE									
26...	1000	16	40	8100	<100	280	1.0	1	50

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)
FEB.								
12...	1430	20	11.2	85	--	8	.86	.31
MAR.								
07...	1200	8	12.2	93	--	12	.53	.26
19...	1100	4	8.0	66	2.4	14	.71	.40
APR.								
05...	1100	20	11.8	111	2.1	15	.77	.38
16...	1400	200	10.2	98	--	31	1.9	1.3
MAY								
01...	1300	80	9.6	103	1.8	20	1.1	.61
14...	1400	50	9.4	90	--	22	.54	.29
31...	1030	400	8.8	91	5.1	73	2.8	2.3
JUNE								
11...	1530	800	8.8	94	--	41	1.5	1.1
26...	1000	200	7.9	92	.5	58	1.2	.97
JULY								
09...	1000	70	7.4	90	--	8	.90	.78
23...	1430	40	7.4	97	1.0	24	.62	.31
AUG.								
06...	1500	9	7.6	100	--	7	.37	.31
27...	1230	50	7.8	94	.4	6	.89	.48
SEP.								
09...	1530	20	9.6	117	--	11	.85	.81
25...	0930	5	8.9	96	1.6	8	.33	.27

DATE	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUSPENDED SOLIDS (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
FEB.								
12...	.15	.46	.40	.12	3.2	39	780	62
MAR.								
07...	.04	.30	.23	.03	5.4	18	24	5
19...	.08	.48	.23	.02	12	10	14	2
APR.								
05...	.09	.47	.30	.06	6.8	39	14	0
16...	.21	1.5	.37	.25	13	421	980	290
MAY								
01...	.17	.78	.32	.27	9.3	164	250	50
14...	.04	.33	.21	.15	6.4	127	1200	130
31...	.30	2.6	.23	1.1	--	1140	2200	420
JUNE								
11...	.41	1.5	.02	.68	1.4	876	3600	2100
26...	.13	1.1	.12	.50	16	456	5700	--
JULY								
09...	.12	.90	.00	.23	4.8	216	360	180
23...	.16	.47	.15	.14	4.5	121	--	--
AUG.								
06...	.06	.37	.00	.06	3.5	29	20	7
27...	.19	.67	.22	.16	6.9	118	46000	140
SEP.								
09...	.02	.83	.02	.05	4.4	17	8	24
25...	.01	.28	.05	.04	4.2	13	--	6

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.			
02...	1140	9090	.02
NOV.			
08...	0930	11500	.01
DEC.			
06...	1400	7460	.02
JAN.			
08...	1540	3400	.02
FEB.			
04...	1545	4640	.04
12...	1430	8530	.12
MAR.			
07...	1200	7880	.02
19...	1100	8000	.01
APR.			
05...	1100	8680	.00
MAY			
01...	1300	14800	.06
31...	1030	40200	.01
JUNE			
26...	1000	58400	.08
JULY			
23...	1430	19900	.01
AUG.			
27...	1230	10600	.04
SEP.			
25...	0930	7860	.03

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	683	720	727	867	743	805	787	586	403	373	401	471
2	707	720	673	872	756	805	769	622	413	373	400	471
3	681	720	655	894	775	805	783	610	441	372	400	473
4	715	740	656	923	816	803	771	620	480	346	392	480
5	730	760	656	951	777	803	785	590	425	373	396	488
6	732	760	644	954	777	807	785	585	377	403	396	505
7	715	760	720	972	778	806	789	585	343	388	395	519
8	715	770	720	981	759	811	806	562	315	376	403	518
9	729	760	722	981	759	811	806	531	343	368	401	524
10	732	758	724	960	757	813	792	515	460	380	404	531
11	729	760	717	957	742	821	794	494	452	380	403	544
12	729	728	717	955	742	830	809	484	439	383	414	553
13	737	718	720	955	742	830	796	477	414	369	425	555
14	734	692	719	929	751	851	796	477	391	366	431	555
15	727	722	719	924	751	851	829	513	331	389	443	565
16	727	709	719	854	740	851	843	540	296	395	448	570
17	714	714	719	831	742	830	855	560	293	395	457	575
18	729	709	719	748	755	826	847	584	284	400	457	581
19	715	719	691	683	755	839	836	609	309	390	457	577
20	715	700	717	615	778	813	831	609	287	379	457	577
21	681	676	692	595	778	788	794	610	284	382	472	588
22	562	743	722	584	781	753	771	636	246	393	496	587
23	727	760	739	608	781	772	723	636	248	384	502	596
24	727	758	739	643	781	798	701	681	264	383	494	603
25	715	760	718	669	797	797	714	668	266	396	491	598
26	715	762	735	689	816	806	727	668	290	353	487	598
27	730	720	738	710	814	816	714	637	290	398	482	598
28	717	720	754	711	814	816	657	582	287	402	474	603
29	641	720	751	710	---	834	610	485	296	411	478	609
30	715	720	744	710	---	827	581	439	384	413	474	609
31	714	---	752	728	---	806	---	370	---	424	478	---
MONTH	711	732	714	812	770	814	770	567	341	385	442	554
YEAR	MAX	981	MIN	246	MEAN	634						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.5	6.5	2.0	0.0	0.0	6.0	10.0	14.5	13.5	22.0	22.0	---
2	15.0	5.0	3.0	0.0	0.0	4.0	7.0	13.5	15.0	18.0	25.0	---
3	14.0	3.5	1.0	0.0	0.0	4.0	8.5	14.0	15.5	18.5	23.0	---
4	14.0	1.0	0.5	0.0	0.5	4.0	10.0	15.0	18.0	19.5	22.0	---
5	14.5	1.5	0.0	0.0	0.0	4.5	10.0	16.5	16.0	20.5	22.5	---
6	13.5	2.0	0.0	0.0	0.0	3.0	11.0	16.5	16.0	21.0	23.5	20.5
7	15.0	1.5	0.5	0.0	0.0	2.0	9.5	17.0	14.0	22.0	22.5	20.5
8	14.0	3.5	1.0	0.0	0.5	2.0	10.0	16.5	13.0	22.0	21.5	20.5
9	10.5	2.5	0.5	0.0	0.5	4.5	11.0	16.5	14.0	23.0	20.0	21.0
10	11.0	4.5	0.5	0.0	1.0	7.0	9.5	15.0	13.5	23.5	21.0	19.0
11	10.0	5.5	1.5	0.0	1.0	4.5	8.5	13.5	16.0	23.0	20.5	16.5
12	9.5	7.5	2.0	0.0	1.0	5.5	8.5	14.0	21.0	22.5	20.5	15.0
13	13.0	6.5	1.0	1.0	1.0	4.5	9.5	10.0	20.0	23.0	21.0	15.5
14	12.5	5.5	1.0	0.0	1.0	5.0	9.0	11.5	20.5	24.0	19.0	17.0
15	11.5	5.5	0.0	0.5	1.0	4.5	8.5	11.5	20.0	24.0	19.5	17.5
16	12.5	5.5	0.0	0.5	1.5	4.5	10.0	12.0	19.5	24.0	20.0	19.0
17	13.0	5.5	0.0	1.0	0.5	6.5	12.0	11.0	20.0	24.5	21.0	20.0
18	13.5	4.0	0.5	2.0	1.0	4.5	10.0	11.5	20.0	24.5	21.0	19.0
19	14.0	3.5	0.0	2.0	0.5	4.5	16.0	11.0	21.0	26.5	22.0	18.0
20	13.5	2.5	0.0	1.5	1.5	4.0	13.0	10.0	20.5	25.5	18.0	18.0
21	13.0	2.0	0.0	0.5	2.5	4.5	12.5	9.5	19.0	25.0	---	17.5
22	13.5	3.0	0.0	0.0	3.5	1.5	13.5	10.5	19.0	24.0	---	17.5
23	13.0	1.5	1.0	0.5	3.0	1.5	13.5	12.5	21.0	25.0	---	18.5
24	13.0	2.5	1.5	2.0	2.0	2.0	15.5	15.5	21.0	24.0	---	18.5
25	11.5	2.0	0.0	1.0	2.0	---	15.0	17.5	21.5	24.0	---	18.0
26	12.0	3.0	0.0	0.0	3.5	5.5	17.0	19.0	21.0	23.0	---	18.0
27	10.0	2.0	0.0	0.0	4.0	9.0	14.5	19.0	21.0	25.0	20.5	16.0
28	10.5	2.5	0.0	0.5	6.0	8.5	11.5	17.0	21.5	23.0	---	15.5
29	9.0	3.0	0.0	0.5	---	9.5	12.0	14.5	20.0	24.0	---	15.0
30	8.5	2.5	0.0	0.0	---	9.5	13.0	13.5	22.5	21.5	---	14.0
31	7.5	---	0.0	0.0	---	9.0	---	12.0	---	23.5	---	---
MONTH	12.5	3.5	0.5	0.5	1.5	5.0	11.5	14.0	18.5	23.0	---	18.0
YEAR	MAX	26.5	MIN	0.0	MEAN	10.5						

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT.

LOCATION.--Lat 45°00'32", long 106°50'08", in NW¼NE¼ sec.33, T.9 S., R.40 E., Big Horn County, at bridge on county road, 1.8 mi (2.9 km) east of Decker, and 3.2 mi (5.1 km) downstream from gaging station.

DRAINAGE AREA.--1,477 mi² (3,825 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: October 1965 to September 1974.
Water temperatures: October 1965 to September 1974.

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 1,160 micromhos Mar. 25; minimum daily, 206 micromhos May 30.
Water temperatures: Maximum, 25.0°C Aug. 5; minimum, freezing point on many days during November to March.

Period of record:
Specific conductance: Maximum daily, 1,490 micromhos Aug. 12, 1966, Jan. 11, 1972; minimum daily, 196 micromhos May 30, 1967, June 11, 1973.
Water temperatures: Maximum, 31.0°C July 16, 1966; minimum, freezing point on many days during winter period.

REMARKS.--During periods of backwater the site of sampling is moved upstream 0.5 mi (0.8 km).

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.											
16...	0945	402	6.6	62	39	29	2.3	235	3	160	1.5
26...	0850	370	--	--	--	--	--	--	--	--	--
NOV.											
13...	0825	382	--	--	--	--	--	--	--	--	--
DEC.											
04...	0930	354	8.6	73	47	34	3.0	303	0	200	4.6
JAN.											
08...	0930	A180	12	84	50	38	3.5	315	0	220	5.7
FEB.											
12...	0900	A270	11	73	48	39	4.2	295	0	220	5.7
MAR.											
12...	0930	A270	9.1	110	46	53	3.7	314	0	300	5.7
APR.											
04...	1025	212	6.7	87	72	50	3.7	310	0	280	57
23...	0840	424	--	--	--	--	--	--	--	--	--
MAY											
01...	1020	672	--	--	--	--	--	--	--	--	--
JUNE											
03...	1620	1710	8.0	44	1.0	8.0	1.4	113	0	39	.0
JULY											
09...	1700	500	5.9	55	26	20	2.3	204	6	107	1.8
AUG.											
06...	1245	121	5.7	82	53	46	4.4	314	0	256	1.8
SEP.											
04...	0930	229	5.6	76	54	38	4.0	330	0	220	1.8

A Daily mean discharge.

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER DAY)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.											
16...	.4	.09	--	420	401	.57	320	120	.7	680	8.4
26...	--	--	--	--	--	--	--	--	--	590	8.4
NOV.											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC.											
04...	.3	.11	.01	518	495	.70	370	120	.8	797	8.3
JAN.											
08...	.4	.36	.08	566	275	.77	420	160	.8	890	8.1
FEB.											
12...	.4	.45	.13	544	397	.74	380	140	.9	828	8.2
MAR.											
12...	.4	.23	.07	683	498	.93	460	200	1.1	989	8.3
APR.											
04...	.6	.05	.01	710	406	.97	510	260	1.0	937	8.2
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	--	--	.13	--	--	--	--	--	--	485	8.1
JUNE											
03...	.1	.14	.01	157	725	.21	115	22	.3	282	7.7
JULY											
09...	.3	.05	.00	324	437	.44	245	68	.6	545	7.9
AUG.											
06...	.4	.09	.00	604	197	.82	420	160	1.0	920	7.7
SEP.											
04...	.4	.05	.01	563	348	.77	410	140	.8	860	8.4

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
APR. 04...	1025	2.1	.51	.34	.14	.48	6	2.3
MAY 01...	1020	1.3	.74	.56	.12	.68	70	3.3
JUNE 03...	1620	.4	1.2	1.0	.07	1.1	121	5.4
JULY 09...	1700	4.3	.67	.58	.04	.62	11	3.0
AUG. 06...	1245	.5	.39	.28	.11	.39	10	1.7
SEP. 04...	0930	1.6	.73	.66	.04	.70	16	3.2

DATE	TIME	DISSOLVED BORON (B) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
OCT. 16...	0945	70	--	--	--	--	--	--
APR. 04...	1025	90	6	4	10	0	2	.0
JULY 09...	1700	70	4	6	0	20	1	.0

DATE	TIME	DISSOLVED OXYGEN (MG/L)	TURBIDITY (JTU)	FECAL COLIFORM (COL. PER 100 ML)	TEMPERATURE (DEG C)
OCT. 26...	0850	11.0	20	83	5.0
NOV. 13...	0825	12.0	7	42	.0
DEC. 04...	0930	11.8	4	32	.5
JAN. 08...	0930	9.6	2	60	.0
FEB. 12...	0900	9.7	10	210	.0
MAR. 12...	0930	10.6	20	12	2.5
APR. 04...	1025	10.4	--	--	5.5
23...	0840	7.9	50	100	11.0
MAY 01...	1020	9.2	--	--	10.5
JUNE 03...	1620	8.3	30	800	16.5
JULY 09...	1700	11.2	--	23	25.5
AUG. 06...	1245	7.8	8	36	24.5
SEP. 04...	0930	8.4	10	50	15.0

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	603	715	815	928	904	1050	1010	479	269	386	752	848
2	612	718	782	983	870	1040	992	462	293	413	793	902
3	635	746	798	1020	889	991	1010	406	302	416	804	876
4	650	765	653	945	909	985	990	453	266	426	808	871
5	646	785	791	935	852	1110	988	461	260	461	896	889
6	661	853	819	933	885	1100	963	461	247	449	902	860
7	682	780	844	910	935	1030	996	387	260	489	887	887
8	697	796	791	888	889	1080	980	348	315	514	919	1030
9	697	760	841	866	942	1040	858	330	362	498	956	1090
10	693	756	839	849	909	1140	996	325	364	537	926	1100
11	683	752	815	860	877	1100	984	292	356	563	908	1080
12	694	759	822	814	875	1070	959	353	352	591	902	1080
13	683	757	806	819	940	1070	951	366	321	582	853	1070
14	683	780	762	870	912	1080	902	372	288	596	828	1070
15	683	781	825	658	934	1090	979	380	240	614	847	833
16	683	781	794	626	929	1080	1000	415	215	653	828	830
17	668	780	800	542	1010	1080	1040	444	216	646	775	805
18	667	762	787	634	1010	1080	1020	423	219	656	845	813
19	679	780	791	624	1050	999	987	406	220	630	850	826
20	678	753	830	765	1070	1010	917	352	238	668	860	828
21	681	804	874	724	1020	1070	813	330	236	671	861	827
22	676	786	825	791	1040	1140	710	365	248	632	818	840
23	687	876	798	882	976	1060	720	390	283	634	839	824
24	687	896	805	843	1030	1040	699	397	302	646	845	830
25	687	926	789	869	1070	1160	620	337	311	708	871	847
26	697	894	829	910	1060	984	452	303	331	713	888	852
27	697	916	920	885	1070	1030	326	277	358	753	897	827
28	728	918	877	804	996	1020	357	226	361	783	896	822
29	728	877	832	862	---	1020	402	211	360	798	914	840
30	741	815	839	885	---	982	446	206	372	826	980	880
31	736	---	824	887	---	1000	---	242	---	737	953	---
MONTH	681	802	813	830	959	1060	836	361	292	603	868	900
YEAR	MAX	1160	MIN	206	MEAN	749						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	4.0	0.0	0.0	0.0	0.0	7.0	11.0	7.0	20.0	20.0	15.0
2	15.0	2.0	2.0	0.0	1.0	1.0	7.0	11.0	11.0	20.0	17.0	13.0
3	11.5	5.0	2.0	0.0	1.0	0.0	6.0	10.0	14.0	15.0	20.0	14.0
4	11.0	2.5	1.0	0.0	2.0	1.0	5.0	10.0	14.0	17.0	18.0	14.5
5	9.0	0.0	1.0	0.0	2.0	2.0	6.0	11.0	13.0	20.0	25.0	17.0
6	10.5	0.0	1.0	0.0	0.0	0.0	8.0	15.0	10.0	21.0	24.0	15.0
7	15.0	0.0	0.0	0.0	1.0	1.0	9.0	12.0	10.0	22.0	20.0	16.0
8	10.5	2.0	2.0	0.0	1.0	3.0	9.0	12.0	10.0	21.0	16.0	16.0
9	11.0	2.0	0.0	0.0	2.0	1.0	9.0	11.0	11.0	22.0	17.0	17.0
10	8.0	2.0	2.0	0.0	2.0	1.0	10.0	10.0	10.0	24.0	15.5	17.0
11	8.0	1.0	0.0	0.0	0.0	3.0	6.0	8.0	12.0	21.0	17.0	14.0
12	9.0	1.0	2.0	0.0	2.0	3.0	6.0	10.0	15.0	21.0	17.0	11.0
13	8.0	4.0	0.0	0.0	1.5	4.5	5.0	9.0	16.0	21.0	17.0	10.0
14	9.5	4.0	0.0	0.0	2.0	4.0	5.0	7.0	17.0	23.0	16.0	11.0
15	10.5	4.0	1.0	1.0	2.0	4.0	5.0	9.0	15.0	22.0	15.0	11.0
16	10.0	4.0	0.0	1.0	2.0	4.0	6.0	9.0	15.0	23.0	16.0	14.0
17	9.0	4.0	2.0	1.0	1.0	5.0	9.0	10.0	15.0	23.0	17.0	14.0
18	10.0	4.5	0.0	0.0	2.0	5.5	10.0	10.0	17.0	23.0	17.5	14.0
19	10.0	2.0	2.0	2.0	1.0	5.0	9.0	10.0	18.0	24.0	18.0	14.5
20	10.0	0.0	2.0	2.0	1.0	0.0	8.0	10.0	17.0	23.5	17.0	14.0
21	10.0	0.0	3.0	0.0	0.0	2.0	10.0	7.0	17.0	23.0	15.0	9.0
22	10.0	0.0	2.0	0.0	0.0	0.0	10.0	9.0	16.5	22.0	16.0	11.0
23	10.0	0.0	2.0	2.0	0.0	0.0	11.5	10.0	15.0	22.0	17.0	12.0
24	10.0	0.0	1.0	1.0	0.0	0.0	12.0	5.0	18.0	22.0	17.0	12.0
25	8.0	0.0	1.0	0.0	0.0	4.0	15.0	14.0	18.0	21.0	18.0	12.0
26	7.0	0.0	1.0	0.0	0.0	4.0	14.0	15.0	19.0	20.0	18.0	12.0
27	7.0	0.0	0.0	0.0	3.0	7.0	10.0	14.0	19.0	21.0	17.0	13.0
28	6.0	0.0	0.0	0.0	0.0	6.0	7.0	13.0	20.0	23.0	19.0	10.0
29	7.0	0.0	0.0	0.0	---	5.0	7.0	11.0	20.0	21.0	17.5	10.0
30	5.0	2.0	0.0	1.5	---	5.0	10.0	10.0	20.0	22.0	15.5	10.0
31	6.0	---	0.0	0.0	---	7.5	---	10.0	---	20.0	15.0	---
MONTH	9.5	1.5	1.0	0.5	1.0	3.0	8.5	10.5	15.0	21.5	17.5	13.0
YEAR	MAX	25.0	MIN	0.0	MEAN	8.5						

06307610 TONGUE RIVER BELOW HANGING WOMAN CREEK, NEAR BIRNEY, MT.

LOCATION.--Lat 45°20'19", long 106°31'28", in SW¼SE¼SE¼ sec.1, T.6 S., R.42 E., Rosebud County, at bridge on county road, 2.5 mi (4.0 km) downstream from Hanging Woman Creek, 1.2 mi (1.9 km) northwest of Birney and at mile 148.8 (239.4 km).

DRAINAGE AREA.--2,533 mi² (6,560 km²).

PERIOD OF RECORD.--Chemical analyses: April to September 1974.

REMARKS.--Flow regulated by Tongue River Reservoir, diversions for irrigation, and many small reservoirs in Wyoming.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
APR. 11...	1130	283	5.5	30	71	50	48	4.6	280	0	260
MAY 09...	1520	842	1.5	10	65	45	41	4.3	258	0	210
JUNE 12...	1430	1530	6.3	0	31	16	13	1.8	131	--	59
JULY 17...	0845	432	5.3	10	36	19	16	2.2	159	--	64
AUG. 27...	0900	387	5.6	30	47	31	26	3.5	209	1	120
SEP. 16...	1100	221	5.7	0	50	35	34	4.1	228	--	140

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CARBON DIOXIDE (CO2) (MG/L)	TOTAL FLUORIDE (F) (MG/L)	SUSPENDED SOLIDS (MG/L)
APR. 11...	3.8	.2	581	.79	444	380	150	1.1	1.0	1.1	3
MAY 09...	3.1	.2	494	.67	1120	350	140	1.0	1.0	--	24
JUNE 12...	1.4	.2	193	.26	797	140	36	.5	1.1	--	58
JULY 17...	1.4	.2	222	.30	259	170	39	.5	1.0	.2	23
AUG. 27...	2.4	.2	340	.46	355	250	72	.7	1.1	--	9
SEP. 16...	3.2	.2	383	.52	229	270	84	.9	3.0	--	3

DATE	TIME	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
APR. 11...	1130	.67	.52	.10	.62	.05	.04	2.8
MAY 09...	1520	--	.48	.09	.57	--	.03	2.0
JUNE 12...	1430	.82	.55	.07	.62	.20	.07	1.7
JULY 17...	0845	.49	.41	.07	.48	.01	.04	2.2
AUG. 27...	0900	.50	.40	.09	.49	.01	.07	1.2
SEP. 16...	1100	.77	.58	.13	.71	.06	.02	2.4

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR. 11...	1130	<100	180	20	<100	.6	0	40
JULY 17...	0845	400	110	<10	<100	.0	0	30

06307610 TONGUE RIVER BELOW HANGING WOMAN CREEK, NEAR BIRNEY, MT.--Continued

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)
APR.								
11...	1130	6.0	4.5	890	11.4	103	8.4	230
MAY								
09...	1520	13.5	21.5	795	9.6	102	8.4	207
JUNE								
12...	1430	17.5	27.5	330	9.2	107	8.3	107
JULY								
17...	0845	23.0	23.0	365	7.6	99	8.4	129
AUG.								
27...	0900	18.5	21.0	570	7.9	94	8.5	173
SEP.								
16...	1100	15.5	16.0	725	8.8	97	8.0	185

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT.

LOCATION.--Lat 45°52'18", long 106°11'17", in NE¼SW¼NW¼ sec.6, T.1 N., R.45 E., Custer County, at gaging station 3.1 mi (5 km) downstream from Goodale Creek, 6.5 mi (10.5 km) downstream from Brandenberg Bridge, and 21 mi (34 km) north of Ashland.

DRAINAGE AREA.--4,062 mi² (10,521 km²).

PERIOD OF RECORD.--Chemical analyses: April to September 1974.

REMARKS.--Flow regulated by Tongue River Reservoir, diversions for irrigation, and many small reservoirs in Wyoming.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	TOTAL NITRO-GEN (N) (MG/L)	ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	SUS-PENDED SOLIDS (MG/L)
APR.										
10...	1430	202	.63	.47	.10	.57	.06	.04	.7	15
MAY										
10...	0900	760	.68	.61	.06	.67	.01	.07	2.4	74
JUNE										
13...	1100	1460	1.0	.90	.08	.98	.07	.26	1.7	104
JULY										
16...	1500	423	.43	.24	.10	.34	.09	.22	1.0	51
AUG.										
26...	1415	321	.69	.57	.12	.69	.00	.03	3.4	13
SEP.										
17...	1230	224	.82	.57	.18	.75	.07	.02	1.7	6

DATE	TIME	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL FLUO-RIDE (F) (MG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.									
10...	1430	<100	280	20	.5	.2	<100	0	60
JULY									
16...	1500	900	130	10	--	.1	<100	0	80

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)
APR.							
10...	1430	10.5	18.0	1050	9.8	98	7.9
MAY							
10...	0900	14.0	13.0	818	9.0	96	8.0
JUNE							
13...	1100	19.0	29.0	360	7.8	93	8.2
JULY							
16...	1500	26.0	27.0	490	7.4	100	8.1
AUG.							
26...	1415	22.5	23.5	950	8.4	106	8.0
SEP.							
17...	1230	19.0	26.0	810	8.8	105	7.8

06308500 TONGUE RIVER AT MILES CITY, MT.
(Irrigation network station)

LOCATION.--Lat 46°21'30", long 105°48'24", in SE¼ sec.23, T.7 N., R.47 E., Custer County, at gaging station 4 mi (6.4 km) south of Miles City and 8 mi (12.9 km) upstream from mouth.

DRAINAGE AREA.--5,379 mi² (13,932 km²).

PERIOD OF RECORD.--Chemical analyses: September 1948 to September 1949 (monthly), January 1951 to December 1969 (daily), January 1970 to September 1974 (monthly).
Water temperatures: April 1949 to September 1974.
Sediment records: June 1946 to September 1951.

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 1,210 micromhos Jan. 6, 10; minimum daily, 352 micromhos June 25.
Water temperatures: Maximum recorded, 28.5°C July 9; minimum, freezing point on many days during November to March.

Period of record:
Specific conductance (1951-74): Maximum daily, 2,390 micromhos Sept. 11, 1958; minimum daily, 215 micromhos Feb. 16, 1971.
Water temperatures: Maximum observed, 30.0°C July 20, 1954; minimum, freezing point on many days during winter periods.

REMARKS.--Temperature recorder installed Apr. 17; inoperative July 13 to Sept. 30. Flow regulated by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT.												
03...	1335	444	12.0	6.5	10	58	42	47	5.2	262	0	190
NOV.												
07...	1700	539	.0	4.5	50	68	45	49	4.0	279	5	200
DEC.												
05...	1300	188	1.0	7.3	60	85	62	83	8.7	396	0	310
JAN.												
09...	0930	222	.0	7.5	10	95	69	86	6.1	448	0	350
FEB.												
05...	0915	340	.0	6.6	20	77	52	70	5.5	325	0	270
MAR.												
06...	1030	389	1.5	3.5	80	63	47	68	4.6	300	0	260
APR.												
02...	1600	245	7.0	3.1	20	77	62	92	6.1	334	3	350
MAY												
02...	1000	569	14.0	2.8	50	71	50	55	5.1	280	0	280
29...	1000	815	16.0	.6	30	48	30	40	3.6	208	--	160
JUNE												
26...	1400	1310	25.0	8.2	30	33	16	17	1.9	139	--	68
JULY												
25...	0930	173	22.0	8.6	60	46	26	43	3.6	230	0	130
AUG.												
27...	1715	270	23.4	11	20	52	31	46	4.3	239	--	160
SEP.												
24...	1715	140	18.0	7.0	20	57	41	60	4.9	266	3	210

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO-PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.												
03...	4.1	.3	.01	.01	482	.66	578	320	100	1.1	755	8.4
NOV.												
07...	3.5	.3	.03	.02	514	.70	755	350	110	1.1	802	8.4
DEC.												
05...	8.2	.3	.18	.02	761	1.04	386	470	140	1.7	1120	7.9
JAN.												
09...	8.0	.4	.11	.03	843	1.15	505	520	150	1.7	1230	8.0
FEB.												
05...	4.4	.2	.08	.02	646	.88	1400	410	140	1.5	988	8.0
MAR.												
06...	4.3	.4	.03	.00	599	.81	629	350	100	1.6	955	8.2
APR.												
02...	5.4	.6	.07	.00	764	1.04	505	450	170	1.9	1140	8.3
MAY												
02...	5.0	.6	.03	.01	608	.83	934	380	150	1.2	917	8.5
29...	2.6	.2	.02	.00	386	.53	849	240	68	1.1	625	8.3
JUNE												
26...	1.4	.4	.13	.00	215	.29	760	150	34	.6	365	7.9
JULY												
25...	3.4	.2	.04	.02	374	.51	175	220	33	1.3	620	8.4
AUG.												
27...	3.0	.4	.21	.01	427	.58	311	260	61	1.2	680	8.1
SEP.												
24...	4.2	.3	.07	.00	519	.71	196	310	88	1.5	980	8.6

06308500 TONGUE RIVER AT MILES CITY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	AIR TEMPER-ATURE (DEG C)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	SUS-PENDED SOLIDS (MG/L)
APR.												
02...	1600	2.0	10.8	97	2.5	.56	.37	.11	.48	.08	.02	9
MAY												
02...	1000	9.0	9.1	96	2.2	.93	.81	.09	.90	.03	.19	170
29...	1000	15.5	9.1	100	2.2	4.2	4.2	.04	4.2	.03	.24	390
JUNE												
26...	1400	30.0	7.4	97	.6	1.1	.88	.10	.98	.15	.31	264
JULY												
25...	0930	19.0	7.7	95	.9	.43	.23	.14	.37	.06	.07	22
AUG.												
27...	1715	27.0	8.4	108	1.6	.72	.41	.09	.50	.22	.04	24
SEP.												
24...	1715	22.5	9.2	104	.9	.44	.33	.03	.36	.08	.02	7

DATE	TIME	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL FLUO-RIDE (F) (MG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR.									
02...	1600	600	240	20	.6	<100	.0	3	60
JUNE									
26...	1400	3900	90	80	.3	<100	.8	1	70

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	743	773	885	1090	935	922	1120	928	684	431	633	739
2	743	758	966	1040	938	903	1120	906	577	431	648	743
3	741	758	938	1080	965	933	1120	906	567	429	667	758
4	741	797	935	1150	968	933	1130	922	526	407	667	777
5	741	888	964	1130	968	927	1130	901	523	431	668	815
6	727	797	---	1210	962	975	1150	883	505	479	680	817
7	731	797	---	1160	993	981	1070	883	452	479	660	817
8	743	812	1080	1160	993	987	1080	883	427	503	648	826
9	743	793	1030	1170	993	997	1090	875	427	527	641	822
10	743	793	1100	1210	958	994	1080	858	448	568	641	835
11	732	779	1020	1140	958	1030	1070	858	441	598	656	833
12	711	781	1030	1160	937	1030	1040	858	427	545	662	840
13	734	795	1030	1140	937	1030	1100	819	399	547	664	833
14	734	798	1000	1120	898	1030	1070	815	399	568	643	840
15	729	795	1000	1110	898	1030	1020	811	403	597	650	844
16	741	795	985	935	838	1030	1000	788	398	623	639	822
17	741	817	994	935	881	1030	1010	770	398	639	642	840
18	741	821	994	897	844	1030	1010	749	397	657	664	849
19	741	894	994	788	849	1060	975	698	397	679	671	859
20	741	894	---	822	871	1090	969	698	381	659	667	859
21	745	918	---	822	851	1060	954	---	374	776	675	859
22	745	921	1070	1080	879	1140	948	720	378	684	678	844
23	739	953	1010	1080	879	1140	943	686	368	667	693	869
24	727	953	1060	827	928	1200	943	668	371	667	706	859
25	741	953	1040	822	938	1140	943	668	352	643	721	859
26	729	953	1060	781	962	1020	943	668	366	627	719	894
27	745	953	1060	781	962	1070	920	632	366	624	738	894
28	745	947	1020	828	989	1070	920	616	378	628	736	881
29	745	915	1030	828	---	1090	918	614	398	621	736	844
30	739	915	1060	987	---	1140	918	590	424	621	742	844
31	734	---	1060	987	---	1140	---	657	---	621	756	---
MONTH	738	848	1010	1000	922	1040	1020	778	429	580	677	834
YEAR	MAX	1210	MIN	352	MEAN	821						

06308500 TONGUE RIVER AT MILES CITY, MT.--Continued

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	4.5	0.0	0.0	0.0	---	5.0	---	---	---	---	---
2	14.0	3.0	0.0	0.0	0.0	---	7.0	---	---	---	---	---
3	10.0	1.0	0.0	0.0	0.0	---	4.5	---	---	---	---	---
4	9.0	0.0	0.0	0.0	0.0	---	5.0	---	---	---	---	---
5	9.0	0.0	0.0	0.0	0.0	---	5.0	---	---	---	---	---
6	8.5	0.0	0.0	0.0	0.0	1.5	8.0	---	---	---	---	---
7	10.5	0.0	0.0	0.0	0.0	---	9.0	---	---	---	---	---
8	10.0	0.0	0.0	0.0	0.0	---	5.0	---	---	---	---	---
9	9.0	0.0	0.0	0.0	0.0	---	7.0	---	---	---	---	---
10	8.0	0.0	0.0	0.0	0.0	---	8.0	---	---	---	---	---
11	8.0	1.0	0.0	0.0	0.0	2.0	6.5	---	---	---	---	---
12	7.5	1.5	0.0	0.0	0.0	3.0	5.0	---	---	---	---	---
13	9.0	4.0	0.0	0.0	0.0	4.0	5.0	---	---	---	---	---
14	10.0	3.0	0.0	0.0	0.0	---	6.5	---	---	---	---	---
15	9.0	2.0	0.0	0.0	0.0	0.0	5.0	---	---	---	---	---
16	9.0	2.0	0.0	0.0	0.0	1.0	7.0	---	---	---	---	---
17	9.0	2.5	0.0	0.0	0.0	3.0	---	---	---	---	---	---
18	9.5	3.0	0.0	0.0	0.0	4.0	---	---	---	---	---	---
19	9.0	0.0	0.0	0.0	0.0	3.0	---	---	---	---	---	---
20	10.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---	---	---
21	10.5	0.0	0.0	0.0	0.0	---	---	---	---	---	---	---
22	10.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---	---	---
23	10.0	0.0	0.0	0.0	0.0	0.0	---	---	---	---	---	---
24	11.0	0.0	0.0	0.0	---	---	---	---	---	---	---	---
25	9.0	0.0	0.0	0.0	---	---	---	---	---	---	---	---
26	7.0	0.0	0.0	0.0	---	---	---	---	---	---	---	---
27	6.5	0.0	0.0	0.0	---	---	---	---	---	---	---	---
28	6.0	0.0	0.0	0.0	---	7.0	---	---	---	---	---	---
29	6.0	0.0	0.0	0.0	---	6.0	---	---	---	---	---	---
30	5.5	0.0	0.0	0.0	---	6.5	---	---	---	---	---	---
31	5.0	---	0.0	0.0	---	8.0	---	---	---	---	---	---
MONTH	9.0	1.0	0.0	0.0	0.0	---	---	---	---	---	---	---
YEAR	MAX	14.0	MIN	0.0	MEAN	2.5						

TEMPERATURE (DEG, C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (CONTINUOUS THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	18.0	14.5	17.0	12.0	25.5	23.0	---	---	---	---
2	---	---	16.5	14.0	19.0	15.5	24.5	20.0	---	---	---	---
3	---	---	16.0	12.0	20.5	17.0	22.0	19.0	---	---	---	---
4	---	---	16.5	14.0	20.0	19.0	23.5	20.0	---	---	---	---
5	---	---	18.5	13.5	19.5	18.5	25.0	21.5	---	---	---	---
6	---	---	18.0	15.5	19.0	16.5	25.5	22.0	---	---	---	---
7	---	---	18.5	15.0	18.5	16.0	27.0	23.0	---	---	---	---
8	---	---	18.0	15.5	17.0	15.0	28.0	23.0	---	---	---	---
9	---	---	18.0	14.5	16.5	15.0	28.5	22.0	---	---	---	---
10	---	---	16.5	15.0	16.5	15.5	28.0	23.5	---	---	---	---
11	---	---	15.0	11.5	18.5	15.0	26.5	22.0	---	---	---	---
12	---	---	15.0	11.0	21.0	17.0	27.0	21.5	---	---	---	---
13	---	---	14.0	9.0	22.0	20.0	---	---	---	---	---	---
14	---	---	13.0	8.0	23.0	20.5	---	---	---	---	---	---
15	---	---	13.5	10.5	23.0	20.5	---	---	---	---	---	---
16	---	---	15.0	11.0	22.0	20.0	---	---	---	---	---	---
17	16.0	11.5	14.0	10.5	23.5	20.0	---	---	---	---	---	---
18	17.0	11.0	11.0	10.0	24.5	22.0	---	---	---	---	---	---
19	18.0	14.0	11.5	11.0	25.0	23.0	---	---	---	---	---	---
20	15.0	13.0	11.5	10.5	25.0	23.5	---	---	---	---	---	---
21	13.0	10.5	10.5	9.5	25.0	22.0	---	---	---	---	---	---
22	16.0	9.5	11.5	9.0	22.0	20.5	---	---	---	---	---	---
23	16.0	11.5	16.0	10.5	23.0	20.5	---	---	---	---	---	---
24	20.0	13.0	18.5	14.0	24.0	21.0	---	---	---	---	---	---
25	21.0	16.0	19.5	17.0	25.5	23.5	---	---	---	---	---	---
26	18.5	15.0	21.0	17.0	25.5	24.0	---	---	---	---	---	---
27	15.5	14.0	21.5	19.5	25.0	22.0	---	---	---	---	---	---
28	14.0	10.0	20.0	17.0	25.0	22.0	---	---	---	---	---	---
29	15.0	9.5	17.0	14.0	24.5	21.5	---	---	---	---	---	---
30	16.5	11.5	14.0	12.0	25.5	21.0	---	---	---	---	---	---
31	---	---	14.0	13.0	---	---	---	---	---	---	---	---
MONTH	---	---	21.5	8.0	25.5	12.0	---	---	---	---	---	---
YEAR	28.5	8.0										

06309000 YELLOWSTONE RIVER AT MILES CITY, MT.

LOCATION.--Lat 46°25'16", long 105°51'51", in SW¼NW¼ sec.28, T.8 N., R.47 E., Custer County, temperature recorder at gaging station on left bank 350 ft (107 m) upstream from bridge on State Highway 22 at Miles City, 0.8 mi (1.3 km) downstream from Tongue River, and at mile 180.8 (290.9 km).

DRAINAGE AREA.--48,253 mi^2 (124,975 km^2).

PERIOD OF RECORD.--Water temperatures: May to September 1974.

EXTREMES.--May to September 1974:
Water temperatures: Maximum, 24.5°C Aug. 6.

REMARKS.--Thermograph probe located in flow, out from left bank. Flow from Tongue River is near right bank. Temperature record is equivalent to Yellowstone River near Miles City, Mt. (station 06296120) located above confluence of the Tongue River.

TEMPFRATURE (°C) OF WATER, MAY TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	---	---	12.5	10.5	20.0	18.5	23.0	22.0	---	---
2	---	---	---	---	14.5	12.0	19.0	17.5	22.5	21.0	---	---
3	---	---	---	---	16.5	---	18.5	17.0	23.0	20.5	---	---
4	---	---	---	---	17.0	---	19.0	17.0	22.5	20.5	---	---
5	---	---	---	---	16.5	15.0	20.0	18.0	24.0	20.5	---	---
6	---	---	---	---	15.5	14.0	20.5	19.0	24.5	21.5	---	---
7	---	---	---	---	14.5	13.0	21.5	---	23.5	22.0	---	---
8	---	---	---	---	13.0	12.0	21.5	20.0	22.0	20.5	---	---
9	---	---	---	---	13.0	11.5	22.5	20.5	21.0	19.5	---	---
10	---	---	---	---	13.5	12.0	22.5	21.0	21.5	19.0	---	---
11	---	---	---	---	16.0	---	---	---	20.5	19.5	---	---
12	---	---	---	---	18.5	15.5	---	---	21.0	18.5	---	---
13	---	---	---	---	19.5	17.5	---	---	21.5	19.0	---	---
14	---	---	---	---	20.5	18.5	---	---	20.5	19.5	---	---
15	---	---	---	---	19.5	18.0	---	---	20.0	18.5	---	---
16	---	---	---	---	18.5	17.0	---	---	20.5	18.5	---	---
17	---	---	---	---	19.0	17.0	---	---	21.0	19.0	---	---
18	---	---	---	---	19.5	18.0	---	---	22.0	19.5	---	---
19	---	---	---	---	19.5	18.0	---	---	22.0	20.5	---	---
20	---	---	---	---	19.5	18.5	---	---	21.0	19.5	---	---
21	---	---	---	---	19.0	18.0	---	---	20.0	19.0	---	---
22	---	---	---	---	18.5	17.5	---	---	20.5	19.0	---	---
23	---	---	---	---	19.0	17.0	---	---	21.0	19.5	16.5	15.0
24	---	---	---	---	20.0	18.0	24.0	23.5	21.5	20.0	17.0	14.5
25	---	---	---	---	20.5	18.0	24.0	22.5	22.0	21.0	17.0	14.5
26	---	---	---	---	20.5	19.5	23.5	22.0	21.5	---	17.0	15.0
27	---	---	---	---	20.0	19.0	24.0	22.0	21.0	20.5	16.0	14.0
28	---	---	---	---	20.0	18.5	24.0	22.0	---	---	15.0	13.5
29	---	---	15.0	13.5	19.5	18.5	23.5	22.0	---	---	14.0	12.0
30	---	---	13.5	12.5	19.5	18.0	22.5	21.5	---	---	12.5	10.5
31	---	---	12.5	11.0	---	---	23.5	21.0	---	---	---	---
MONTH	---	---	---	---	20.5	10.5	---	---	24.5	18.5	---	---
YEAR	24.5	10.5										

06324410 POWDER RIVER BELOW FENCE CREEK, NEAR MOORHEAD, MT.

LOCATION.--Lat 44°57'56", long 105°55'40", in SW¼NW¼SW¼ sec.31, T.58 N., R.75 W., Campbell County, Wyo., temperature recorder 900 ft (274 m) downstream from Fence Creek, 3.6 mi (5.8 km) upstream from Wyoming-Montana State line, and 6.2 mi (10.0 km) southwest of Moorhead.

PERIOD OF RECORD.--Water temperatures: June to October 1974 (discontinued).

EXTREMES.--June to October 1974:
Water temperatures: Maximum, 32.0°C July 12; minimum, 6.0°C Oct. 6, 14, 15.

REMARKS.--No record July 15-19 when water surface dropped below the thermograph sensor. Record furnished by the Wyoming Game and Fish Commission.

TEMPERATURE (°C) OF WATER, JUNE TO OCTOBER 1974
(CONTINUOUS THERMOGRAPH)

	JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMRER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIV	MAX	MIN	MAX	MIV
1	18.0	9.5	26.5	20.0	26.5	18.5	16.5	14.5	15.5	9.0	---	---
2	20.5	11.0	22.0	19.0	25.0	16.5	21.5	12.0	17.0	9.5	---	---
3	23.5	16.0	23.5	15.5	29.0	15.5	22.0	12.0	16.0	10.5	---	---
4	21.5	18.0	29.0	16.5	24.5	16.5	23.5	13.5	14.0	11.5	---	---
5	19.5	16.5	29.0	19.5	29.5	16.0	23.5	16.5	11.5	8.5	---	---
6	19.5	13.5	25.0	20.0	30.5	18.0	24.5	15.5	11.5	6.0	---	---
7	18.0	13.0	27.0	19.0	25.5	19.0	24.0	16.0	13.0	6.5	---	---
8	14.5	11.0	30.0	18.5	25.5	17.0	24.0	15.5	14.5	8.5	---	---
9	19.5	11.5	31.5	19.5	23.0	16.5	25.0	16.0	15.0	9.0	---	---
10	19.5	14.0	28.0	20.5	25.5	17.0	23.0	17.0	15.0	10.5	---	---
11	23.5	14.5	30.0	18.5	25.0	16.5	17.0	12.0	15.0	11.5	---	---
12	25.5	16.5	32.0	19.0	26.0	17.0	16.0	10.5	15.0	11.0	---	---
13	26.0	18.5	31.0	19.0	23.5	18.0	18.0	9.0	13.0	9.5	---	---
14	26.0	19.0	31.5	19.5	21.0	17.0	19.0	10.0	11.0	6.0	---	---
15	25.0	19.0	---	---	23.0	15.0	20.0	11.5	11.0	6.0	---	---
16	24.0	18.5	---	---	24.5	16.5	20.5	13.0	---	---	---	---
17	25.5	19.0	---	---	25.0	17.0	21.5	13.0	---	---	---	---
18	26.0	20.0	---	---	26.0	17.0	22.0	13.5	---	---	---	---
19	26.5	20.0	---	---	25.5	18.5	19.5	14.0	---	---	---	---
20	25.5	20.5	27.0	23.0	21.0	16.5	18.0	14.0	---	---	---	---
21	23.5	19.5	29.5	20.5	24.0	15.0	18.5	10.0	---	---	---	---
22	25.0	18.5	29.0	20.0	26.0	16.5	19.0	10.0	---	---	---	---
23	26.0	19.5	30.0	20.0	27.0	18.5	18.5	10.5	---	---	---	---
24	29.0	19.5	27.0	20.5	28.0	18.5	19.0	11.0	---	---	---	---
25	29.0	21.0	27.0	19.5	27.0	19.5	19.0	11.0	---	---	---	---
26	28.0	21.0	29.0	18.5	25.5	18.5	19.5	11.5	---	---	---	---
27	29.0	19.5	30.0	20.0	26.5	16.5	14.5	11.0	---	---	---	---
28	28.0	20.0	29.5	20.5	23.5	18.5	15.0	9.5	---	---	---	---
29	27.0	20.0	30.0	19.5	24.5	17.0	16.0	10.5	---	---	---	---
30	29.0	18.5	29.0	20.5	19.5	15.5	15.5	9.0	---	---	---	---
31	---	---	28.5	19.5	22.0	14.5	---	---	---	---	---	---
MONTH	29.0	9.5	32.0	15.5	30.5	14.5	25.0	9.0	---	---	---	---
YEAR	32.0	6.0										

06324500 POWDER RIVER AT MOORHEAD, MT.

LOCATION (revised).--Lat 45°04'10", long 105°52'00", in NW¼ sec.8, T.9 S., R.48 E., Powder River County, at bridge on county road, 1.1 mi (1.8 km) upstream from discontinued post office at Moorhead, 1.2 mi (1.9 km) upstream from present gage, and 4.0 mi (6.4 km) north of Wyoming-Montana State line.

DRAINAGE AREA.--8,088 mi² (20,948 km²).

PERIOD OF RECORD.--Chemical analyses: February 1951 to September 1953 (daily), October 1955 to September 1957 (daily), July 1969 to July 1972 (monthly), April to September 1974 (monthly).
Water temperatures: February 1951 to September 1953, October 1955 to September 1957.

REMARKS.--Flow regulated by reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
APR. 05...	1630	339	6.4	120	55	260	5.7	284	0	640	150	.7
30...	1330	1560	7.0	83	28	120	4.7	134	0	400	36	.5
JUNE 05...	1200	492	7.8	80	34	160	4.2	188	0	390	97	.4
JULY 11...	1100	81	4.8	130	68	220	9.2	243	5	680	98	.3
AUG. 07...	1430	80	3.8	100	55	89	7.9	237	--	470	6.8	.2
SEP. 05...	1245	195	3.9	94	48	88	6.1	244	1	370	16	.3

DATE	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)
APR. 05...	1380	1.88	1260	530	290	4.9	2050	--	2.8	8.3	10.5
30...	745	1.01	3140	320	210	2.9	1230	8.7	.9	7.9	14.0
JUNE 05...	866	1.18	1150	340	190	3.8	1330	8.5	3.0	8.0	17.0
JULY 11...	1340	1.82	293	600	400	3.9	1860	7.9	2.0	7.9	24.0
AUG. 07...	850	1.16	185	480	280	1.8	1250	7.6	.4	7.6	24.5
SEP. 05...	748	1.02	394	430	230	1.8	1170	8.8	.6	8.2	23.0

DATE	TIME	TOTAL NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
APR. 05...	1630	2.0	1.5	.24	1.7	.28	.80	1160	8.8
30...	1330	8.3	7.8	.15	7.9	.38	3.9	9500	37
JUNE 05...	1200	2.0	1.9	.05	1.9	.13	--	923	9.0
JULY 11...	1100	.77	.73	.03	.76	.01	.07	51	3.4
AUG. 07...	1430	.78	.59	.11	.70	.08	.05	26	3.5
SEP. 05...	1245	1.1	1.1	.04	1.1	.01	.12	70	4.9

DATE	TIME	DISSOLVED BORON (B) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
APR. 05...	1630	280	12	6	20	0	4	.0
JULY 11...	1100	270	3	1	20	100	0	.4

06326530 YELLOWSTONE RIVER NEAR TERRY, MT.

LOCATION.--Lat 46°48'17", long 105°17'36", in SE¼SW¼ sec.10, T.12 N., R.51 E., Prairie County, at bridge on county road, 11.8 mi (19 km) downstream from Powder River, 1.2 mi (1.9 km) northeast of Terry and at mile 134.8 (216.9 km).

DRAINAGE AREA.--63,447 mi² (164,328 km²).

PERIOD OF RECORD.--Chemical analyses: April to September 1974.

REMARKS.--The water discharge is measured or computed by adding the discharge of Yellowstone River at Miles City, Mt. (station 06309000) to that of Powder River near Locate, Mt. (station 06326500). Some regulation by reservoirs on tributary streams and diversions for irrigation.

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
APR.											
03...	1230	9430	9.6	0	70	28	87	4.5	214	0	270
MAY											
02...	1330	16300	11	0	59	23	66	3.5	171	--	220
30...	1030	34700	12	20	43	15	44	3.0	140	--	140
JUNE											
27...	1100	56600	11	260	25	7.8	19	2.4	93	--	57
JULY											
24...	1100	19900	11	0	30	11	28	2.4	113	--	76
AUG.											
28...	0915	10900	6.1	0	42	16	42	3.4	159	--	120
SEP.											
25...	1330	8300	8.2	0	48	19	52	3.2	177	--	160

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	CARBON DIOXIDE (CO2) (MG/L)	TOTAL FLUORIDE (F) (MG/L)	SUSPENDED SOLIDS (MG/L)
APR.											
03...	19	.6	594	.81	15100	290	110	2.2	2.7	1.0	118
MAY											
02...	13	.7	481	.65	21200	240	100	1.8	1.4	--	1930
30...	11	.4	337	.46	31600	170	54	1.5	3.8	--	1810
JUNE											
27...	4.4	.2	173	.24	26400	95	18	.9	4.7	.3	481
JULY											
24...	6.0	.3	220	.30	11800	120	28	1.1	1.1	--	90
AUG.											
28...	6.7	.1	315	.43	9270	170	40	1.4	2.5	--	147
SEP.											
25...	8.2	.4	386	.53	8650	200	53	1.6	1.4	--	31

06326530 YELLOWSTONE RIVER NEAR TERRY, MT.--Continued

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1974

DATE	TIME	TOTAL NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
APR. 03...	1230	.86	.56	.12	.68	.18	.09	.01	1.6
MAY 02...	1330	--	2.6	.20	2.8	--	1.1	--	3.2
30...	1030	3.8	2.1	1.2	3.3	.52	1.3	--	4.3
JUNE 27...	1100	.66	.45	.03	.48	.18	.53	--	.6
JULY 24...	1100	.65	.33	.08	.41	.24	.13	--	1.2
AUG. 28...	0915	.71	.58	.11	.69	.02	.14	--	.9
SEP. 25...	1330	.50	.44	.01	.45	.05	.02	--	1.8

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)
APR. 03...	1230	2000	520	<10	<100	.0	4	40
JUNE 27...	1100	11000	90	40	<100	1.7	0	70

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)
APR. 03...	1230	7.0	5.0	890	11.2	100	8.1	176
MAY 02...	1330	12.5	14.5	910	9.2	94	8.3	140
30...	1030	13.5	15.5	475	8.3	86	7.8	115
JUNE 27...	1100	19.0	28.0	290	8.0	93	7.5	76
JULY 24...	1100	24.0	26.0	395	7.1	92	8.2	93
AUG. 28...	0915	18.0	16.5	525	8.0	91	8.0	130
SEP. 25...	1330	16.0	23.0	725	9.0	99	8.3	145

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.
(Irrigation network, pesticide and International Hydrological Decade Station)

LOCATION.--Lat 47°40'42", long 104°09'22", in SW¼NE¼SW¼ sec.9, T.22 N., R.59 E., Richland County, at gaging station at Montana-Dakota Utilities Company powerplant, 0.2 mi (0.3 km) downstream from bridge on State Highway 23, 2.5 mi (4.0 km) south of Sidney, 3 mi (4.8 km) downstream from Fox Creek, and 30 mi (48 km) upstream from mouth.

DRAINAGE AREA.--69,103 mi^2 (178,977 km^2).

PERIOD OF RECORD.--Chemical analyses: September 1948 to December 1950 (monthly), January 1951 to December 1969 (daily), January 1970 to September 1974 (monthly).
Water temperatures: January 1951 to September 1974.
Sediment records: October 1971 to September 1974.

EXTREMES.--1973-74:
Specific conductance: Maximum daily, 1,150 micromhos Apr. 27; minimum daily, 286 micromhos June 25, 26, 27.
Water temperatures: Maximum, 26.5°C July 21; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 6,490 mg/l Apr. 26; minimum daily, 35 mg/l Feb. 5.
Sediment discharge: Maximum daily, 528,000 tons (479,000 tonnes) June 1; minimum daily, 418 tons (379 tonnes) Jan. 7.

Period of record:
Specific conductance: Maximum daily, 2,780 micromhos Jan. 14, 1951; minimum daily, 193 micromhos Aug. 15, 1964.
Water temperatures: Maximum observed, 29.0°C July 23, 1960; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 13,800 mg/l Sept. 4, 1973; minimum daily, 8 mg/l Jan. 9, 1973.
Sediment discharge: Maximum daily, 990,000 tons (898,000 tonnes) Oct. 4, 1971; minimum daily, 130 tons (118 tonnes) Jan. 9, 1973.

REMARKS.--Prior to July 1969, chemical sampling and water temperatures at site 0.2 mi (0.3 km) upstream. Temperature recorder installed May 3. Prior to July 1972, sediment sampling and record computation under supervision of Corps of Engineers, U.S. Army. Flow affected by ice during most of winter months. Many reservoirs and diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT.												
18...	0900	11100	7.9	30	0	62	25	79	4.0	193	5	230
NOV.												
20...	0900	11600	10	10	10	66	24	71	4.0	203	0	230
DEC.												
18...	1030	7800	9.6	10	50	70	28	74	4.3	218	7	240
JAN.												
30...	1130	5760	11	50	10	59	24	71	4.9	190	0	220
FEB.												
19...	1700	9300	10	30	8	62	25	73	4.3	196	--	210
MAR.												
05...	1600	8500	--	--	--	--	--	--	--	--	--	--
21...	1200	8600	9.6	2600	--	78	32	89	4.8	225	0	290
APR.												
02...	1000	10700	--	--	--	--	--	--	--	--	--	--
18...	1300	12400	--	--	--	--	--	--	--	--	--	--
30...	1200	13200	11	--	10	69	27	86	5.1	195	0	290
MAY												
16...	1600	15300	--	--	--	--	--	--	--	--	--	--
30...	1030	21300	11	--	--	51	21	58	3.4	178	--	180
JUNE												
13...	1600	32900	--	--	--	--	--	--	--	--	--	--
25...	1300	73200	11	--	--	--	--	--	2.1	96	--	47
JULY												
11...	1000	39900	--	--	--	--	--	--	--	--	--	--
30...	1600	14900	9.5	70	--	43	13	34	2.1	127	--	97
AUG.												
08...	1430	10300	--	--	--	--	--	--	--	--	--	--
27...	1500	10800	11	1600	120	45	18	45	4.0	163	--	140
SEP.												
12...	1000	8320	--	--	--	--	--	--	--	--	--	--
24...	1330	8380	8.3	830	--	52	23	56	3.9	179	--	170

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TUR-BID-ITY (JTU)	CHEM-ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)
OCT.												
18...	12	.7	524	.71	14100	260	91	2.1	1.3	--	--	--
NOV.												
20...	16	.3	532	.72	12200	260	97	1.9	1.6	--	--	--
DEC.												
18...	14	.5	561	.76	11400	290	100	1.9	3.7	--	--	--
JAN.												
30...	14	.3	508	.69	11000	250	90	2.0	4.8	--	--	--
FEB.												
19...	15	.5	--	.68	10800	260	97	2.0	5.0	44	7	15
MAR.												
05...	--	--	574	.78	10800	--	--	--	--	79	30	17
21...	17	.6	638	.87	14800	330	140	2.1	4.5	329	100	17
APR.												
02...	--	--	632	.86	17100	--	--	--	--	158	60	20
18...	--	--	619	.84	20700	--	--	--	--	276	100	19
30...	14	.6	608	.83	21700	280	120	2.2	3.9	2340	800	64
MAY												
16...	--	--	397	.54	16400	--	--	--	--	428	100	34
30...	11	.4	422	.57	24300	210	68	1.7	5.7	632	300	35
JUNE												
13...	--	--	295	.40	26200	--	--	--	--	1540	300	36
25...	--	.4	158	.21	31200	--	--	--	6.1	676	300	45
JULY												
11...	--	--	219	.30	23600	--	--	--	--	231	80	11
30...	5.5	.3	253	.34	10200	160	57	1.2	2.6	82	30	22
AUG.												
08...	--	--	271	.37	7540	--	--	--	--	58	20	22
27...	8.3	.4	354	.48	10300	190	53	1.4	1.3	147	70	13
SEP.												
12...	--	--	377	.51	8470	--	--	--	--	29	20	14
24...	9.2	.4	417	.57	9440	220	78	1.6	2.3	52	20	15

DATE	TIME	TOTAL NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT.												
18...	0900	.46	--	--	.38	.03	.08	.08	.01	.04	--	1.5
NOV.												
20...	0900	--	--	--	--	.32	--	--	.04	--	--	--
DEC.												
18...	1030	.59	--	--	.34	.19	.25	.04	.01	.06	--	1.3
JAN.												
30...	1130	--	--	--	--	.40	--	--	.01	--	--	--
FEB.												
19...	1700	.74	.33	.12	.45	.29	.29	.07	.04	--	3.9	2.9
MAR.												
05...	1600	.48	.20	.05	.25	--	.23	.07	--	--	3.8	2.3
21...	1200	.78	.44	.16	.60	.15	.18	.23	.00	--	5.1	2.6
APR.												
02...	1000	.71	.40	.08	.48	--	.23	.14	--	--	8.1	--
18...	1300	1.3	.72	.18	.90	--	.41	.22	--	--	17	3.2
30...	1200	3.0	2.5	.10	2.6	.38	.38	1.4	.00	--	27	2.9
MAY												
16...	1600	1.2	.99	.11	1.1	--	.13	.37	--	--	7.8	--
30...	1030	1.3	.99	.11	1.1	.16	.23	.23	.02	--	5.7	2.1
JUNE												
13...	1600	2.0	1.7	.08	1.8	--	.20	.67	--	--	13	--
25...	1300	1.2	1.1	.05	1.1	.08	.14	.65	.00	--	8.5	.8
JULY												
11...	1000	.87	.60	.06	.66	--	.21	.30	--	--	--	--
30...	1600	.57	.54	.03	.57	.00	.00	.13	.00	--	3.4	4.3
AUG.												
08...	1430	.47	.45	.02	.47	--	.00	.08	--	--	4.0	--
27...	1500	.79	.71	.07	.78	.00	.01	.16	.00	--	3.9	--
SEP.												
12...	1000	.50	.44	.02	.46	--	.04	.06	--	--	4.3	2.3
24...	1330	.75	.68	.01	.69	.01	.06	.07	.00	--	4.6	--

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER- ATURE (DEG C)	AIR TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PER- CENT SATUR- ATION	PH (UNITS)	ALKA- LINITY AS CACO3 (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM (COL. PER 100 ML)
OCT.										
18...	0900	10.0	6.5	801	9.2	88	8.4	175	120	0
NOV.										
20...	0900	4.5	--	808	--	--	8.3	167	--	--
DEC.										
18...	1030	1.5	-5.0	819	11.8	91	8.0	182	27	21
JAN.										
30...	1130	1.0	--	776	--	--	7.8	156	--	--
FEB.										
19...	1700	2.0	5.0	817	9.2	72	7.8	155	60	15
MAR.										
05...	1600	2.5	11.0	810	8.0	64	7.8	--	80	80
21...	1200	1.5	6.0	960	9.6	74	7.9	185	39	4
APR.										
02...	1000	6.5	-1.5	935	7.2	63	8.3	--	170	20
18...	1300	9.5	11.0	924	9.6	90	7.8	--	260	28
30...	1200	10.5	18.0	903	9.0	88	7.9	160	110	88
MAY										
16...	1600	10.0	8.5	658	9.8	93	7.7	--	260	290
30...	1030	14.5	14.5	680	8.6	91	7.7	146	600	330
JUNE										
13...	1600	18.0	31.0	565	8.2	92	7.6	--	1600	1100
25...	1300	21.0	31.0	280	7.6	92	7.4	79	360	460
JULY										
11...	1000	23.0	28.0	395	7.2	90	7.5	--	230	170
30...	1600	26.0	29.0	450	7.0	93	7.9	104	100	45
AUG.										
08...	1430	23.0	24.0	440	7.6	95	8.2	--	42	8
27...	1500	20.0	23.5	600	9.2	108	8.3	134	84	68
SEP.										
12...	1000	13.0	15.0	575	9.2	94	7.9	--	24	36
24...	1330	17.0	25.5	710	9.2	102	8.1	147	75	15

DATE	TIME	ALDRIN (UG/L)	LINDANE (UG/L)	CHLOR- DANE (UG/L)	DDD (UG/L)	DDE (UG/L)	DDT (UG/L)	DI- ELDRIN (UG/L)	ENDRIN (UG/L)	HEPTA- CHLOR (UG/L)
OCT.										
18...	0900	.00	.00	.0	.00	.00	.00	.00	.00	.00
APR.										
02...	1000	.00	.00	.0	.00	.00	.00	.00	.00	.00

DATE	HEPTA- CHLOR EPOXIDE (UG/L)	PCB (UG/L)	MALA- THION (UG/L)	PARA- THION (UG/L)	DI- AZINON (UG/L)	METHYL PARA- THION (UG/L)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
OCT.									
18...	.00	.0	.00	.00	.00	.00	.02	.00	.00
APR.									
02...	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TIME	ALDRIN IN FILT. FRAC. (UG/L)	LINDANE IN FILT. FRAC. (UG/L)	CHLOR- DANE IN FILT. FRAC. (UG/L)	DDD IN FILT. FRAC. (UG/L)	DDE IN FILT. FRAC. (UG/L)	DDT IN FILT. FRAC. (UG/L)	DI- ELDRIN IN FILT. FRAC. (UG/L)	ENDRIN IN FILT. FRAC. (UG/L)	HEPTA- CHLOR IN FILT. FRAC. (UG/L)
OCT.										
18...	0900	.00	.00	.0	.00	.00	.00	.00	.00	.00
APR.										
02...	1000	.00	.00	.0	.00	.00	.00	.00	.00	.00

DATE	HEPTA- CHLOR EPOXIDE IN FILT. FRAC. (UG/L)	PCB IN FILT. FRAC. (UG/L)	MALA- THION IN FILT. FRAC. (UG/L)	PARA- THION IN FILT. FRAC. (UG/L)	DI- AZINON IN FILT. FRAC. (UG/L)	METHYL PARA- THION IN FILT. FRAC. (UG/L)	2,4-D IN FILT. FRAC. (UG/L)	2,4,5-T IN FILT. FRAC. (UG/L)	SILVEX IN FILT. FRAC. (UG/L)
OCT.									
18...	.00	.0	.00	.00	.00	.00	.02	.00	.00
APR.									
02...	.00	.0	.00	.00	.00	.00	.00	.00	.00

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	ALDRIN IN BOTTOM DE- POSITS (UG/KG)	LINDANE IN BOTTOM DE- POSITS (UG/KG)	CHLOR- DANE IN BOTTOM DE- POSITS (UG/KG)	DDD IN BOTTOM DE- POSITS (UG/KG)	DDE IN BOTTOM DE- POSITS (UG/KG)	DDT IN BOTTOM DE- POSITS (UG/KG)	DI- ELDRIN IN BOTTOM DE- POSITS (UG/KG)	ENDRIN IN BOTTOM DE- POSITS (UG/KG)	HEPTA- CHLOR IN BOTTOM DE- POSITS (UG/KG)	HEPTA- CHLOR EPOXIDE IN BOT- TOM DE- POSITS (UG/KG)	PCB IN BOTTOM DE- POSITS (UG/KG)
OCT.												
18...	0900	.0	.0	0	.0	.0	.0	.0	.0	.0	.0	0
APR.												
02...	1000	.0	.0	0	.0	.0	.0	.0	.0	.0	.0	0

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C) , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	676	788	806	838	778	858	915	858	546	330	430	524
2	696	784	796	844	778	---	915	827	520	358	444	530
3	717	794	796	865	778	832	889	808	494	371	449	526
4	751	794	799	891	782	848	871	749	478	---	454	529
5	773	788	780	909	796	835	869	733	495	381	450	529
6	717	773	780	914	817	835	869	721	487	370	456	533
7	773	792	787	938	826	909	866	718	465	398	453	534
8	786	849	756	950	846	885	866	697	430	407	451	545
9	794	811	729	973	851	939	869	697	386	407	443	545
10	777	809	729	1030	851	939	869	683	373	382	464	556
11	777	790	783	1070	846	957	876	657	414	387	453	564
12	777	774	789	1100	828	912	886	629	507	387	456	581
13	777	774	805	1110	805	904	866	593	507	392	456	586
14	792	784	807	1130	822	936	869	592	487	392	456	598
15	792	813	807	1110	809	963	891	583	449	383	458	594
16	792	813	805	1100	809	963	866	583	430	382	468	598
17	799	790	805	1060	883	948	866	593	373	398	477	599
18	792	809	824	970	801	909	891	604	350	404	483	598
19	777	776	826	938	801	931	920	625	387	409	487	616
20	794	782	826	947	793	934	940	644	387	402	515	613
21	797	773	826	907	805	931	940	671	327	382	521	613
22	797	790	847	842	820	936	917	732	314	382	538	610
23	813	792	847	755	826	934	915	720	380	392	550	610
24	839	---	847	706	846	909	889	746	296	393	533	623
25	681	809	843	668	841	877	869	733	286	403	531	636
26	797	809	805	663	843	815	1100	733	286	382	557	647
27	794	809	785	696	843	939	1150	760	286	403	555	647
28	794	782	791	742	843	906	1040	752	305	408	550	654
29	794	831	791	742	---	906	945	734	302	408	540	654
30	794	809	799	746	---	903	889	688	299	414	535	654
31	808	---	807	751	---	928	---	600	---	425	531	---
MONTH	775	796	801	900	817	907	911	692	398	391	489	588
YEAR	MAX	1150	MIN	286	MEAN	705						

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974 (ONCE-DAILY)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	5.5	1.0	0.0	0.0	0.5	5.0	---	---	---	---	---
2	15.0	4.5	1.0	0.0	0.0	---	5.0	---	---	---	---	---
3	13.5	3.0	1.0	0.0	0.0	0.5	---	---	---	---	---	---
4	11.5	1.0	1.0	0.0	0.0	0.5	---	---	---	---	---	---
5	11.0	0.5	0.5	0.0	0.0	1.0	---	---	---	---	---	---
6	12.0	0.5	0.0	0.0	0.0	1.0	---	---	---	---	---	---
7	12.0	0.5	0.0	0.0	0.0	1.0	---	---	---	---	---	---
8	13.0	0.0	0.5	0.0	0.0	0.5	---	---	---	---	---	---
9	10.5	0.0	0.0	0.0	0.5	0.5	---	---	---	---	---	---
10	10.0	0.5	0.0	0.0	1.0	1.0	---	---	---	---	---	---
11	10.0	1.0	0.0	0.0	1.0	1.0	---	---	---	---	---	---
12	9.5	1.5	0.0	0.0	1.0	1.0	---	---	---	---	---	---
13	9.0	2.5	0.0	0.0	0.5	1.5	---	---	---	---	---	---
14	10.0	3.0	0.0	0.0	0.0	1.5	---	---	---	---	---	---
15	9.5	3.0	0.0	0.0	0.5	1.5	---	---	---	---	---	---
16	9.5	3.0	0.0	0.0	0.5	1.0	---	---	---	---	---	---
17	10.0	3.0	0.0	0.0	0.5	1.0	---	---	---	---	---	---
18	10.0	3.0	0.0	1.0	0.5	1.0	---	---	---	---	---	---
19	10.0	2.0	0.0	1.0	0.5	1.0	---	---	---	---	---	---
20	10.0	2.0	0.0	1.0	0.5	0.5	---	---	---	---	---	---
21	10.0	1.0	0.0	1.0	0.5	0.5	---	---	---	---	---	---
22	11.0	0.5	0.0	0.5	0.5	0.0	---	---	---	---	---	---
23	11.5	0.5	0.0	0.5	0.0	0.0	---	---	---	---	---	---
24	11.5	---	0.0	0.0	0.0	0.0	---	---	---	---	---	---
25	11.0	0.5	0.0	0.5	0.0	0.0	---	---	---	---	---	---
26	10.0	0.5	0.0	0.5	0.5	0.5	---	---	---	---	---	---
27	8.5	0.5	0.0	0.0	0.5	0.5	---	---	---	---	---	---
28	7.5	0.5	0.0	0.0	0.5	1.0	---	---	---	---	---	---
29	8.0	1.0	0.0	0.0	---	3.0	---	---	---	---	---	---
30	7.5	1.0	0.0	0.0	---	6.0	---	---	---	---	---	---
31	7.0	---	0.0	0.0	---	7.0	---	---	---	---	---	---
MONTH	10.5	1.5	0.0	0.0	0.5	1.0	---	---	---	---	---	---
YEAR	MAX	15.0	MIN	0.0	MEAN	2.5						

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

TEMPERATURE (DEG. C) OF WATER , WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

DAY	APRIL MAX	APRIL MIN	MAY MAX	MAY MIN	JUNE MAX	JUNE MIN	JULY MAX	JULY MIN	AUGUST MAX	AUGUST MIN	SEPTEMBER MAX	SEPTEMBER MIN
1	---	---	13.5	11.0	14.0	12.5	20.5	20.0	22.0	20.5	16.5	15.0
2	---	---	13.0	11.5	14.5	13.0	20.0	19.0	21.0	19.5	16.0	14.0
3	5.5	4.0	13.0	10.5	16.0	14.0	19.5	18.5	22.0	19.0	16.5	13.5
4	5.0	4.5	13.5	10.5	16.5	15.5	20.0	19.5	23.0	19.5	17.5	14.0
5	7.0	5.0	15.0	11.5	17.0	16.0	20.0	19.0	23.0	20.0	17.0	15.0
6	7.5	6.0	15.0	12.0	17.5	15.5	20.5	19.5	23.0	21.0	17.5	15.0
7	7.5	6.0	14.5	13.0	16.5	16.0	22.0	20.0	23.0	21.5	17.5	15.5
8	8.5	6.0	15.0	13.0	16.5	15.0	22.5	21.0	22.5	21.5	17.5	15.0
9	9.0	7.0	16.0	13.0	15.0	14.0	23.5	22.0	21.5	19.5	17.5	14.5
10	9.0	8.0	15.5	14.0	14.5	13.5	23.5	22.0	21.0	19.0	17.5	16.5
11	8.5	6.5	14.5	12.0	15.0	13.5	23.5	22.5	21.0	19.0	16.5	13.5
12	6.5	5.5	13.5	11.0	16.5	14.5	23.5	22.0	21.0	18.5	13.5	12.0
13	7.0	5.0	12.5	8.5	19.0	16.0	23.0	22.0	21.0	19.0	13.0	11.0
14	7.5	5.5	11.0	7.5	20.0	18.0	23.0	21.5	21.0	18.5	15.0	12.0
15	7.5	5.5	11.0	9.0	20.5	18.5	23.5	21.5	19.5	17.0	16.5	14.0
16	9.5	6.5	10.5	9.0	20.0	19.0	24.0	23.0	19.5	17.0	17.5	15.5
17	9.5	7.5	10.5	9.0	19.5	18.5	25.0	22.5	20.5	17.5	18.0	16.0
18	11.0	8.0	10.0	8.5	20.0	19.0	25.0	22.5	22.0	17.5	18.0	16.0
19	12.5	9.5	10.5	9.0	21.0	19.5	25.5	23.5	21.5	18.5	17.0	14.5
20	12.5	10.5	10.5	9.5	21.5	20.5	26.0	24.0	21.0	17.5	16.0	14.0
21	12.0	9.5	9.5	8.0	21.0	19.5	26.5	24.5	18.0	16.5	15.0	13.0
22	12.0	9.0	8.0	7.0	20.0	19.0	26.0	24.5	19.5	16.0	14.5	12.0
23	11.5	9.5	9.5	7.5	20.0	19.0	26.0	23.5	20.5	17.0	15.0	13.0
24	14.0	10.0	12.0	9.5	20.5	19.0	25.5	23.5	22.0	19.0	15.5	14.0
25	15.5	12.0	14.5	11.0	21.5	20.0	25.0	23.0	21.5	19.5	16.0	14.0
26	15.5	13.5	16.5	13.5	21.5	21.0	24.0	22.0	21.5	18.5	15.5	14.5
27	15.0	13.5	16.5	15.0	21.5	20.5	24.0	21.5	20.5	17.5	15.0	13.0
28	14.0	11.0	16.5	15.0	21.5	20.5	23.5	21.5	20.0	17.5	13.5	12.5
29	12.0	9.5	16.5	15.0	21.0	20.0	23.0	21.5	18.5	16.0	13.0	10.0
30	12.5	10.0	16.0	14.5	20.5	19.5	23.0	21.0	18.5	15.0	10.5	9.0
31	---	---	14.5	13.5	---	---	22.5	18.5	16.5	14.5	---	---
MONTH	15.5	4.0	16.5	7.0	21.5	12.5	26.5	18.5	23.0	14.5	18.0	9.0
YEAR	26.5	4.0										

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCTOBER MEAN DISCHARGE (CFS)	OCTOBER MEAN CONCENTRATION (MG/L)	OCTOBER SEDIMENT DISCHARGE (TONS/DAY)	NOVEMBER MEAN DISCHARGE (CFS)	NOVEMBER MEAN CONCENTRATION (MG/L)	NOVEMBER SEDIMENT DISCHARGE (TONS/DAY)	DECEMBER MEAN DISCHARGE (CFS)	DECEMBER MEAN CONCENTRATION (MG/L)	DECEMBER SEDIMENT DISCHARGE (TONS/DAY)
1	12700	240	8230	10100	165	4500	8200	123	2720
2	12600	240	8160	10100	168	4580	7900	112	2390
3	12200	231	7610	10100	168	4580	7700	94	1950
4	11100	210	6290	9800	170	4500	7500	82	1660
5	12000	242	7840	9600	193	5000	7400	77	1540
6	12100	261	8530	9400	224	5690	7200	89	1730
7	12000	262	8490	9200	157	3900	7100	132	2530
8	11400	223	6860	9200	104	2580	7000	199	3760
9	11100	166	4980	9600	89	2310	7100	167	3200
10	11000	152	4510	10200	114	3140	6800	151	2770
11	10900	151	4440	12400	189	6330	6800	147	2700
12	11000	156	4630	12400	208	6960	6700	148	2680
13	11300	166	5060	12700	217	7440	6500	148	2600
14	11300	193	5890	12200	205	6750	6400	149	2570
15	11300	241	7350	11600	201	6300	6600	149	2660
16	11200	253	7650	12000	213	6900	7200	148	2880
17	11200	251	7590	11700	218	6890	8000	148	3200
18	11100	242	7250	12200	318	10500	7800	188	3960
19	11100	229	6860	12000	314	10200	7600	174	3570
20	11100	216	6470	11600	270	8460	7800	94	1980
21	10900	167	4910	10700	213	6150	7900	93	1980
22	8650	83	1940	9870	172	4580	7900	122	2600
23	7870	73	1550	10000	245	6620	8000	118	2550
24	10100	130	3550	9600	279	7230	7700	143	2970
25	10500	154	4370	9400	243	6170	7500	197	3990
26	10600	156	4460	9400	197	5000	7300	248	4890
27	10600	154	4410	9300	127	3190	7500	268	5430
28	10600	153	4380	9000	64	1560	7100	299	5730
29	10100	126	3440	8800	128	3040	6600	248	4420
30	8260	52	1160	8400	125	2840	6100	215	3540
31	9780	122	3220	--	--	--	5600	172	2600
TOTAL	337660	--	172080	312570	--	163890	224500	--	93750

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	5100	144	1980	5400	60	875	8400	116	2630
2	4700	132	1680	5300	48	687	8400	142	3220
3	4100	124	1370	5300	41	587	8400	174	3950
4	4000	109	1180	5200	36	505	8400	212	4810
5	3800	70	718	5200	35	491	8500	271	6220
6	3800	44	451	5500	49	728	8300	345	7730
7	3600	43	418	6000	78	1260	8100	374	8180
8	4000	68	734	6800	86	1580	8100	346	7570
9	4200	83	941	7600	91	1870	8000	314	6780
10	4400	77	915	8300	79	1770	8000	308	6650
11	4200	86	975	8800	71	1690	8100	309	6760
12	4400	79	939	9200	76	1890	8200	332	7350
13	4800	110	1430	9400	72	1830	8300	397	8900
14	5400	132	1920	9500	96	2460	8400	518	11700
15	6000	129	2090	9600	121	3140	8200	609	13500
16	6800	122	2240	9700	132	3460	8300	546	12200
17	7600	140	2870	9600	135	3500	8400	654	14800
18	9000	166	4030	9500	137	3510	8500	865	19900
19	12000	197	6380	9300	137	3440	8600	895	20800
20	12500	238	8030	9200	133	3300	8600	781	18100
21	13000	306	10700	9200	127	3150	8600	300	6970
22	12000	297	9620	9100	118	2900	8600	158	3670
23	11000	226	6710	9000	112	2720	8900	171	4110
24	9500	189	4850	8800	108	2570	11000	208	6180
25	8700	172	4040	8800	103	2450	12500	256	8640
26	8000	163	3520	8700	100	2350	12000	320	10400
27	7400	152	3040	8600	100	2320	11500	397	12300
28	6400	138	2380	8400	102	2310	11000	433	12900
29	6000	116	1880	--	--	--	10500	436	12400
30	5700	93	1430	--	--	--	9930	399	10700
31	5500	74	1100	--	--	--	10100	357	9740
TOTAL	207600	--	90561	225000	--	59343	280830	--	289760

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	10500	323	9160	18800	3230	164000	39800	4910	528000
2	10600	300	8590	17900	2850	138000	41100	3510	390000
3	10100	281	7660	16700	2200	99200	37300	2000	201000
4	9930	256	6860	14600	1710	67400	33100	1500	134000
5	9900	227	6070	14000	1300	49100	31700	1220	104000
6	9930	196	5250	13200	955	34000	33600	1060	96200
7	9840	187	4970	13400	785	28400	37400	1290	130000
8	9810	194	5140	13200	695	24800	40600	1500	164000
9	10200	220	6060	13100	602	21300	42600	1480	170000
10	10200	228	6280	14100	598	22800	41800	1300	147000
11	9600	226	5860	14800	650	26000	42600	1390	160000
12	10400	249	6990	14600	543	21400	37500	1580	160000
13	10500	247	7000	16000	765	33000	33400	1310	118000
14	10700	246	7110	17300	1630	76100	32300	900	78500
15	11700	315	9950	16600	1290	57800	34500	760	70800
16	12200	441	14500	15400	675	28100	40100	1030	112000
17	12700	592	20300	14700	494	19600	47300	1690	216000
18	12400	703	23500	14000	451	17000	52700	2060	293000
19	11900	647	20800	13500	466	17000	57300	2070	320000
20	11700	545	17200	13200	581	20700	61700	1930	322000
21	11600	478	15000	13500	2810	102000	67700	2080	380000
22	11800	438	14000	12700	4460	153000	73000	2180	430000
23	12400	471	15800	12600	2950	100000	75700	1980	405000
24	13200	602	21500	13600	1810	66500	74200	1420	284000
25	15500	3990	167000	14900	1190	47900	72700	1240	243000
26	15200	6490	266000	14500	700	27400	65500	1380	244000
27	14300	5650	218000	13800	450	16800	60500	1260	206000
28	14600	5310	209000	13600	560	20600	61700	1210	202000
29	16100	4460	194000	15300	1410	58200	61500	1110	184000
30	17900	3120	151000	24100	2560	167000	60400	923	151000
31	--	--	--	32400	3410	298000	--	--	--
TOTAL	357410	--	1470550	480100	--	2023100	1491300	--	6643500

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	57000	843	130000	14000	185	6990	9490	124	3180
2	54300	820	120000	13400	172	6220	9340	113	2850
3	53400	1120	161000	12300	164	5450	9310	108	2710
4	50600	1050	143000	12200	155	5110	9460	100	2550
5	49200	910	121000	11400	137	4220	9550	91	2350
6	49700	862	116000	10800	121	3530	9490	87	2230
7	46300	845	106000	10300	120	3340	9310	85	2140
8	43500	855	100000	10300	200	5560	8800	85	2020
9	41700	785	88400	10500	805	22800	8470	85	1940
10	40500	762	83300	9750	365	9600	8470	82	1880
11	39500	815	86900	9980	161	4340	8350	79	1780
12	37400	583	58900	10400	135	3790	8320	74	1660
13	35800	514	49700	10600	121	3460	8290	73	1630
14	34000	528	48500	10400	114	3200	8320	75	1680
15	31400	471	39900	10300	123	3420	8650	81	1890
16	29300	513	40600	10100	148	4040	8950	87	2100
17	27800	481	36100	9900	136	3640	8980	87	2110
18	26300	415	29500	9930	113	3030	8830	79	1880
19	23800	421	27100	9980	106	2860	8710	67	1580
20	23100	390	24300	9870	130	3460	8590	58	1350
21	22600	441	26900	9900	211	5640	8590	57	1320
22	21400	377	21800	9900	300	8020	8770	60	1420
23	20900	400	22600	10800	344	10000	8590	63	1460
24	19300	315	16400	11800	351	11200	8500	63	1450
25	18600	295	14800	11900	317	10200	8620	63	1470
26	18200	278	13700	11400	232	7140	8560	62	1430
27	17000	256	11800	10900	202	5940	8380	60	1360
28	16200	238	10400	10400	182	5110	8320	56	1260
29	15600	226	9630	10000	172	4640	8200	53	1170
30	15000	201	8140	9840	154	4090	8380	56	1270
31	14500	190	7440	9690	138	3610	--	--	--
TOTAL	993900	--	1773410	332940	--	183070	262590	--	55120

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	5506400
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	13018334

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
OCT.											
02...	1100	15.0	12600	213	7250	--	--	55	71	100	--
APR.											
18...	1350	9.5	12400	826	27700	34	47	60	73	99	100
MAY											
16...	1300	10.0	15300	633	26100	40	46	72	84	99	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	BED MAT. FALL DIAM. % FINER THAN .004 MM	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM
OCT.								
02...	1100	15.0	3	39	93	100	--	--
MAR.								
20...	1700	1.5	2	32	77	100	--	--
APR.								
18...	1350	9.5	--	2	34	99	100	--
JUNE								
25...	1600	--	6	38	86	99	99	100
JULY								
31...	1020	24.0	5	57	96	100	--	--
AUG.								
27...	1600	20.0	4	28	77	99	100	--
SEP.								
24...	1430	17.0	--	60	78	100	--	--

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 48°59'44", long 115°10'43", in NE¼SW¼SE¼ sec.1, T.37 N., R.28 W., Lincoln County, 0.3 mi (0.5 km) south of international boundary, in middle of old channel 1.9 mi (3.1 km) upstream from Young Creek, and 6.4 mi (10.3 km) north of Rexford.

PERIOD OF RECORD.--Chemical analyses: June 1972 to September 1974.

REMARKS.--Vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	ELEVATION ABOVE MEAN SEA LEVEL (FT)	DEPTH (FT)	TOTAL NITROGEN (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.										
03...	1230	2381	60	.23	.00	.04	.19	.04	.04	.08
03...	1245	2381	10	.11	.00	.02	.09	.02	.02	.09
09...	1400	2378	56	.24	.00	.02	.16	.08	.02	.05
09...	1430	2378	10	.33	.00	.03	.27	.06	.03	.06
15...	1400	2376	56	.25	.00	.09	.21	.04	.09	.07
15...	1430	2376	10	.29	.00	.05	.21	.08	.05	.07
23...	1430	2372	52	.44	.01	.10	.31	.13	.11	.12
23...	1500	2372	10	.42	.01	.02	.21	.21	.03	.08
30...	1030	2370	51	.29	.03	.15	.11	.18	.18	.25
30...	1100	2370	10	.24	.03	.04	.17	.07	.07	.20
NOV.										
12...	1500	2365	10	.26	.00	.08	.18	.08	.08	.26
12...	1530	2365	45	.28	.00	.07	.20	.08	.07	.28
DEC.										
04...	1400	2365	47	.24	.00	.10	.11	.13	.10	.05
04...	1430	2365	10	.26	.00	.13	.12	.14	.13	.06
MAY										
24...	1000	2329	1.0	.24	.00	.08	.16	.08	.08	.06

DATE	TIME	DEPTH (FT)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)
OCT.											
03...	1230	60	.6	4	.15	.04	.02	.7	5.1	4	0
03...	1245	10	.6	5	.05	.04	.02	.5	4.8	0	0
MAY											
24...	1000	1.0	.9	5	.11	.05	.02	1.2	5.0	1	0

DATE	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	CYANIDE (CN) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.										
03...	0	0	1	.00	10	0	10	.0	0	10
03...	0	0	1	.00	0	5	0	.3	0	10
MAY										
24...	0	0	0	.00	40	0	10	.0	0	30

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ALDRIN (UG/L)	LINDANE (UG/L)	CHLOR-DANE (UG/L)	DDD (UG/L)	DDE (UG/L)	DDT (UG/L)
MAY								
24...	1000	1.0	.00	.00	.0	.00	.00	.00

DATE	DI-ELDRIN (UG/L)	ENDRIN (UG/L)	HEPTA-CHLOR (UG/L)	HEPTA-CHLOR EPOXIDE (UG/L)	PCB (UG/L)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
MAY								
24...	.00	.00	.00	.00	.0	.00	.00	.00

DATE	TIME	DEPTH (FT)	DIS-SOLVED URANIUM (U) (UG/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILT-RABLE RESIDUE (MG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)
MAY												
24...	1000	1.0	.63	.04	2.1	5.0	6.3	160	1.3	.9	1.1	15

DATE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
OCT.							
03...	1230	60	12.1	265	7.8	112	--
03...	1245	10	14.8	240	8.0	102	--
09...	1400	56	10.8	265	7.9	105	--
09...	1430	10	13.1	240	8.0	102	--
15...	1400	56	10.1	250	7.9	106	20
15...	1430	10	11.9	245	7.9	106	5
23...	1430	52	8.2	280	7.8	113	--
23...	1500	10	11.6	250	8.0	105	--
30...	1030	51	8.0	255	7.8	108	--
30...	1100	10	10.0	240	7.9	105	--
NOV.							
12...	1500	10	4.0	245	7.9	106	--
12...	1530	45	3.6	245	7.9	109	--
DEC.							
04...	1400	47	2.8	240	8.0	117	--
04...	1430	10	1.0	255	8.0	117	--
MAY							
24...	1000	1.0	9.0	255	8.2	112	170

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
JUNE											
12...	1000	49	5.4	29	7.4	1.6	.4	110	0	13	1.6
12...	1030	10	5.1	28	7.4	1.8	.4	111	0	12	1.6
25...	1215	96	4.3	26	6.0	1.1	.4	105	1	10	1.1
25...	1245	10	4.9	26	6.0	1.3	.5	103	0	8.8	1.9
JULY											
09...	1045	108	4.2	28	7.4	1.5	.5	106	0	13	.6
09...	1100	10	4.9	27	7.3	—	.7	107	0	13	.7
23...	1230	102	4.4	27	7.1	1.5	.6	106	0	15	.6
23...	1300	10	4.7	28	6.9	1.3	.7	107	0	12	.3
AUG.											
06...	1000	106	4.5	28	6.6	1.3	.4	105	0	13	2.0
06...	1045	10	4.8	28	7.1	1.2	.5	108	0	13	1.6
20...	1200	119	4.5	29	7.3	1.5	.4	112	0	13	1.7
20...	1230	10	4.5	28	7.5	1.6	.5	109	0	12	1.9
SEP.											
04...	1130	112	4.6	28	6.6	1.6	.5	108	0	11	1.5
04...	1145	10	4.4	26	6.9	1.6	.6	110	0	12	1.6
17...	1100	122	4.6	30	6.7	1.8	.3	110	0	12	1.9
17...	1115	10	4.4	29	7.6	1.9	.7	112	0	13	1.8

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
JUNE											
12...	.2	105	100	13	.1	1.1	10	1.1	360	0	90
12...	.2	112	100	9	.1	1.1	20	.4	60	1	60
25...	.5	100	90	2	.1	.4	8	.7	20	1	20
25...	.3	99	90	5	.1	1.0	30	1.6	80	1	20
JULY											
09...	.1	93	100	13	.1	1.7	5	.5	30	2	20
09...	.2	97	97	10	.1	1.4	7	.6	40	4	20
23...	.1	103	97	10	.1	1.7	4	.6	0	1	50
23...	.2	105	98	11	.1	.7	3	.8	30	1	40
AUG.											
06...	.1	111	97	11	.1	1.7	4	.3	10	2	20
06...	.2	111	99	11	.1	.9	4	.5	0	2	10
20...	.1	119	100	11	.1	1.1	2	.5	0	0	10
20...	.2	199	100	11	.1	.7	2	.4	10	0	0
SEP.											
04...	.2	110	97	9	.1	2.7	3	.5	10	0	20
04...	.2	121	93	3	.1	2.2	2	.8	0	1	20
17...	.2	109	100	12	.1	1.8	3	1.5	10	1	40
17...	.2	114	100	12	.1	.9	2	1.0	10	1	20

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MOLYB-DENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE											
12...	1	90	0	20	500	2	3000	<100	230	0	30
12...	0	20	1	20	600	0	970	<100	90	0	20
25...	4	90	0	10	3100	4	4600	<100	100	0	40
25...	4	20	0	0	1300	2	1800	<100	30	1	30
JULY											
09...	2	0	0	0	900	3	820	<100	4100	0	40
09...	2	0	0	0	--	3	270	<100	0	0	20
23...	4	0	0	0	400	1	410	<100	0	0	10
23...	1	0	0	0	200	1	180	<100	60	0	0
AUG.											
06...	0	0	0	0	200	1	300	<100	0	0	10
06...	0	0	0	0	200	5	80	<100	0	0	0
20...	1	0	0	0	300	0	160	<100	0	0	30
20...	1	0	0	0	100	0	60	<100	0	0	10
SEP.											
04...	0	0	0	20	200	1	250	<100	0	0	10
04...	2	0	0	0	0	0	50	<100	0	0	10
17...	0	0	1	10	200	1	220	<100	0	1	20
17...	0	0	0	10	0	1	50	<100	0	1	10

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ELEVATION ABOVE MEAN SEA LEVEL (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)
JUNE										
12...	1000	49	2369	10.0	202	10.4	8.2	90	1.3	.01
12...	1030	10	2369	10.5	203	10.3	8.2	91	.29	.01
12...	1045	4.3	2369	11.1	185	10.2	8.5	94	.25	.05
12...	1100	.8	2369	15.9	185	10.3	8.2	94	.21	.01
25...	1215	96	2428	10.5	178	9.7	8.6	88	.28	.03
25...	1245	10	2428	13.7	178	9.4	8.2	84	.79	.02
25...	1330	5.1	2428	18.8	165	9.4	8.4	89	.29	.02
25...	1400	.9	2428	20.8	170	8.8	8.6	89	.08	.47
JULY										
09...	1045	108	2446	10.9	160	9.4	8.0	87	.12	.05
09...	1100	10	2446	15.5	170	8.3	8.1	86	.22	.03
09...	1130	2.6	2446	16.0	170	8.8	8.1	86	.24	.05
09...	1145	.3	2446	16.1	170	8.8	8.1	86	.14	.06
23...	1230	102	2459	11.2	160	9.7	8.0	87	.04	.02
23...	1300	10	2459	18.0	170	9.1	8.4	88	.06	.02
23...	1330	5.0	2459	18.8	170	8.8	8.4	84	.00	.13
23...	1400	1.1	2459	19.4	170	9.4	8.4	84	.02	.07
AUG.										
06...	1000	106	2458	11.4	165	8.9	8.0	86	.14	.00
06...	1030	26	2458	17.1	170	8.2	8.2	85	.13	.00
06...	1045	10	2458	20.3	170	8.2	8.3	89	.30	.02
06...	1100	2.0	2458	20.6	175	8.2	8.3	87	.09	.01
20...	1200	119	2459	11.6	130	8.0	8.2	92	.08	.34
20...	1230	10	2459	17.2	135	8.3	8.4	85	.09	.47
20...	1300	31	2459	16.4	135	7.9	8.2	87	.09	.25
20...	1330	2.2	2459	17.4	135	8.1	8.4	87	.46	.14
SEP.										
04...	1130	112	2459	11.2	165	8.3	7.8	87	.06	.24
04...	1145	10	2459	17.7	175	8.4	7.9	87	.21	.03
04...	1200	35	2459	15.0	180	7.8	7.6	89	.42	.02
04...	1215	1.0	2459	17.9	175	8.3	7.9	87	.10	.05
17...	1100	122	2458	11.2	170	7.8	8.0	90	.16	.04
17...	1115	10	2458	16.4	180	8.7	8.3	90	.17	.03
17...	1145	35	2458	15.9	180	7.8	8.1	90	.00	.29
17...	1200	1.4	2458	16.7	180	8.6	8.3	90	.00	.15

DATE	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)
JUNE									
12...	.00	.07	1.3	.07	.08	.02	2.1	--	--
12...	.00	.08	.30	.08	.07	.02	--	1.0	1.4
12...	.00	.08	.30	.08	.06	.02	1.5	5.2	6.5
12...	.00	.08	.22	.08	.05	.02	--	.8	3.1
25...	.00	.03	.31	.03	.16	.01	4.1	--	--
25...	.00	.01	.81	.01	.11	.00	3.1	.5	.5
25...	.00	.01	.31	.01	.07	.01	3.2	.4	.3
25...	.00	.01	.55	.01	.03	.00	4.0	.5	.3
JULY									
09...	.00	.04	.17	.04	.04	.01	1.4	--	--
09...	.00	.03	.25	.03	.02	.01	2.3	1.4	.5
09...	.00	.03	.29	.03	.04	.01	2.0	3.0	2.1
09...	.00	.03	.20	.03	.03	.01	2.1	3.1	2.9
23...	.00	.01	.06	.01	.03	.01	1.2	--	--
23...	.00	.00	.08	.00	.03	.00	2.0	1.1	.0
23...	.00	.01	.12	.01	.03	.02	--	.7	1.2
23...	.00	.01	.09	.01	.03	.01	3.4	1.7	2.1
AUG.									
06...	.00	.02	.14	.02	.03	.00	1.3	--	--
06...	.00	.01	.13	.01	.01	.00	1.9	.0	.0
06...	.00	.00	.32	.00	.01	.00	2.3	.0	.0
06...	.00	.00	.10	.00	.01	.00	2.2	.0	.0
20...	.00	.03	.42	.03	.06	.00	1.7	--	--
20...	.00	.00	.56	.00	.04	.00	1.7	1.1	.4
20...	.00	.04	.34	.04	.06	.01	1.7	1.4	.5
20...	.00	.10	.60	.10	.17	.01	1.5	1.0	1.3
SEP.									
04...	.00	.08	.30	.08	.07	.01	7.2	--	--
04...	.00	.03	.24	.03	.06	.00	2.1	.7	.5
04...	.00	.02	.44	.02	.05	.00	3.3	1.1	1.5
04...	.00	.01	.15	.01	.02	.00	4.0	.4	.5
17...	.00	.09	.20	.09	.05	.00	1.7	--	--
17...	.00	.01	.20	.01	.01	.00	4.0	.4	.3
17...	.00	.00	.25	.00	.01	.00	1.3	1.0	.7
17...	.00	.00	.14	.00	.01	.00	4.7	.0	.4

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY.--Continued

FIELD DATA, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

SELECTED VERTICAL PROFILES

June 25

DEPTH (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	TRANSMISSIBILITY (PERCENT)
0	21.0	170	8.8	8.6	--
1	20.8	170	8.8	8.6	<1
2	20.5	170	9.0	8.6	<1
5	18.8	165	9.4	8.4	<1
10	13.7	165	9.4	8.2	<1
15	12.2	150	9.4	8.2	<1
20	11.9	150	9.4	8.2	<1
25	11.2	150	9.3	8.1	<1
30	11.0	145	9.4	8.0	<1
35	10.6	145	9.5	8.0	<1
40	10.6	145	9.5	8.0	<1
45	10.6	145	9.5	8.0	<1
50	10.6	145	9.5	8.0	<1
55	10.6	145	9.5	8.1	<1
60	10.6	145	9.5	8.2	<1
65	10.5	145	9.5	8.2	<1
70	10.5	145	9.6	8.3	<1
75	10.5	145	9.6	8.3	<1
80	10.5	145	9.6	8.4	<1
85	10.5	145	9.6	8.5	<1
90	10.5	145	9.7	8.6	<1
96	10.5	145	9.7	8.6	<1
106	10.5	145	9.7	8.7	<1

AUG. 20

DEPTH (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	TRANSMISSIBILITY (PERCENT)
0	17.4	135	8.2	8.4	--
1	17.4	135	8.1	8.4	32
2	17.4	135	8.1	8.4	30
5	17.4	135	8.1	8.4	27
10	17.2	135	8.3	8.4	20
15	17.0	135	8.3	8.3	14
20	17.0	135	8.1	8.3	18
25	17.0	135	8.1	8.3	21
30	16.4	135	7.9	8.2	27
35	16.0	140	7.8	8.2	27
40	15.5	140	7.7	8.2	27
45	15.0	140	7.7	8.2	25
50	15.0	140	7.8	8.2	23
60	14.3	145	7.5	8.1	17
70	13.5	14[illegible]	7.3	8.1	17
80	13.0	14[illegible]	7.4	8.1	13
90	13.0	140	7.4	8.1	13
100	12.0	135	8.1	8.2	3
110	11.6	130	8.1	8.2	3
119	11.6	130	8.0	8.2	3
129	11.5	130	8.0	8.2	3

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG $C/M^2/DAY$)
OCT.	
03...	80
JUNE	
12...	90
25...	150
JULY	
09...	80
23...	110
AUG.	
06...	140
20...	96
SEPT.	
04...	140
17...	150

(Carbon-14, light and dark bottle method)

12301300 TOBACCO RIVER NEAR EUREKA, MT.

LOCATION.--Lat 48°53'37", long 115°05'13", in NW¼SE¼SE¼ sec.9, T.36 N., R.27 W., Lincoln County, at gaging station 0.2 mi (0.3 km) upstream from Indian Creek, 1.8 mi (2.9 km) northwest of Eureka and 6.0 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--440 mi^2 (1,140 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1970 to June 1972 (partial-record station). July 1972 to September 1974 (monthly).
Water temperatures: November 1970 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 19.5°C July 31, Aug. 5, 6; minimum, freezing point on many days during December to March.

Period of record:
Water temperatures: Maximum, 22.0°C Aug. 4, 7, 1971; minimum, freezing point on many days during winter periods.

REMARKS.--Flow affected by diversions for irrigation upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT. 25...	1300	94	8.1	37	14	3.2	.6	179	0	5.8	1.0
NOV. 21...	1145	161	7.2	33	12	2.2	.4	157	0	5.1	1.0
DEC. 20...	1430	127	7.9	37	13	2.7	.5	170	0	5.6	.6
JAN. 24...	1030	309	9.6	30	9.3	2.1	.7	134	--	4.7	.4
FEB. 21...	1030	112	8.9	38	13	3.1	.7	182	--	4.7	1.0
MAR. 29...	1245	356	9.7	38	12	2.7	.9	165	--	4.7	1.3
APR. 18...	1345	689	12	35	9.7	2.0	.8	151	--	4.6	1.8
MAY 10...	1400	1170	9.1	28	7.7	1.8	.7	117	--	3.6	.3
JUNE 26...	0800	1590	5.8	25	7.1	1.1	.3	106	0	2.9	.8
AUG. 19...	1430	170	7.9	36	13	2.3	.6	169	1	4.7	.9
SEP. 16...	1500	114	8.2	40	13	2.8	.8	188	1	4.5	2.0

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED BORON (B) (UG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	TOTAL RESIDUE (MG/L)	COLOR (PLATINUM-COBALT UNITS)	CARBON DIOXIDE (CO2) (MG/L)
OCT. 25...	.0	0	165	.22	37.4	150	3	.1	--	3	4.5
NOV. 21...	.0	50	133	.18	57.8	130	3	.1	148	1	2.5
DEC. 20...	.0	0	143	.19	49.0	150	6	.1	153	5	2.7
JAN. 24...	.5	50	126	.17	105	110	3	.1	--	20	1.7
FEB. 21...	.0	7	160	.22	48.4	150	0	.1	168	2	1.8
MAR. 29...	.2	10	154	.21	148	140	9	.1	223	10	2.1
APR. 18...	.2	20	142	.19	264	130	3	.1	241	30	1.2
MAY 10...	.2	140	124	.17	392	100	6	.1	--	30	1.2
JUNE 26...	.0	--	88	.12	378	92	5	.1	--	7	1.7
AUG. 19...	.1	--	143	.19	65.6	140	3	.1	--	2	.9
SEP. 16...	.1	--	156	.21	48.0	150	0	.1	--	2	1.2

12301300 TOBACCO RIVER NEAR EUREKA, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT. 25...	1300	94	.21	.09	.02	.00	.04	.11	.10
NOV. 21...	1145	161	.32	.21	.03	.01	.06	.24	.08
DEC. 20...	1430	127	.25	.08	.11	.00	.03	.19	.06
JAN. 24...	1030	309	.47	.27	.02	.00	.15	.29	.18
FEB. 21...	1030	112	.22	.05	.05	.01	.07	.10	.12
MAR. 29...	1245	356	.50	.29	.13	.01	.05	.42	.08
APR. 18...	1345	689	.39	.14	.17	.00	.08	.31	.08
MAY 10...	1400	1170	.29	.24	.02	.00	.03	.28	.03
JUNE 26...	0800	1590	--	.26	.12	.00	.01	.38	--
AUG. 19...	1430	170	--	.03	.03	.00	.03	.06	--
SEP. 16...	1500	114	--	.15	.04	.00	.04	.19	--

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT. 25...	.04	.05	.04	10	.1	--	--	--
NOV. 21...	.07	.01	.03	--	.0	--	--	--
DEC. 20...	.03	.05	.03	--	.0	--	--	--
JAN. 24...	.15	.03	.00	6.7	.0	--	--	--
FEB. 21...	.08	.03	.01	--	.0	--	--	--
MAR. 29...	.06	.08	.02	--	.0	--	--	--
APR. 18...	.08	.11	.01	--	.0	--	--	--
MAY 10...	.03	.06	.00	5.8	.0	--	--	--
JUNE 26...	.01	.30	.01	3.5	--	.4	.2	4.6
AUG. 19...	.03	.02	.01	3.7	--	.0	.0	.8
SEP. 16...	.04	.04	.00	1.8	--	1.3	.6	2.0

12301300 TOBACCO RIVER NEAR EUREKA, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)	DISSOLVED BERYLLIUM (BE) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	HEXAVALENT CHROMIUM (CR6) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.											
25...	1300	94	20	3	0	0	0	0	0	0	1
JAN.											
24...	1030	309	20	4	0	0	0	0	0	0	4
MAY											
10...	1400	1170	20	0	0	10	0	20	0	0	2
JUNE											
26...	0800	1590	10	3	--	--	--	--	--	--	--
AUG.											
19...	1430	170	0	0	--	--	--	--	--	--	--
SEP.											
16...	1500	114	0	1	--	--	--	--	--	--	--

DATE	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED LITHIUM (LI) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED MOLYBDENUM (MO) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED SILVER (AG) (UG/L)	DISSOLVED STRONTIUM (SR) (UG/L)	DISSOLVED VANADIUM (V) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.											
25...	30	0	0	0	.0	0	0	0	50	.0	20
JAN.											
24...	70	4	0	0	.0	0	1	0	40	.0	20
MAY											
10...	50	0	0	0	.0	0	0	0	110	.1	60
JUNE											
26...	--	4	--	0	--	0	--	--	--	--	10
AUG.											
19...	20	1	--	0	--	0	--	--	--	--	20
SEP.											
16...	20	2	--	0	--	1	--	--	--	--	20

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MOLYBDENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE								
26...	0800	4000	4	6200	<100	200	0	40
AUG.								
19...	1430	200	0	90	<100	0	0	0
SEP.								
16...	1500	100	2	120	<100	0	0	10

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	TURBIDITY (JTU)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)
OCT.									
25...	1300	7.0	6.0	1	292	11.4	103	7.8	147
NOV.									
21...	1145	1.0	-2.0	1	258	12.3	95	8.0	129
DEC.									
20...	1430	1.0	-.5	1	272	12.4	95	8.0	139
JAN.									
24...	1030	.0	4.0	21	224	12.6	95	8.1	110
FEB.									
21...	1030	.0	-5.0	3	290	12.9	97	8.2	149
MAR.									
29...	1245	4.0	8.0	30	267	12.3	103	8.1	130
APR.									
18...	1345	6.5	12.0	31	237	11.1	98	8.3	124
MAY									
10...	1400	7.0	10.5	21	186	11.4	103	8.2	96
JUNE									
26...	0800	9.0	13.0	82	150	10.2	96	8.0	85
JULY									
24...	0745	11.5	12.0	2	265	10.0	100	8.3	113
AUG.									
19...	1430	13.5	21.0	1	235	9.8	103	8.5	140
SEP.									
16...	1500	14.5	25.0	2	300	10.4	112	8.4	158

12301300 TOBACCO RIVER NEAR EUREKA, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.0	9.0	5.5	4.0	3.0	2.5	0.0	0.0	0.5	0.0	3.0	1.5
2	10.0	7.5	4.0	1.0	2.5	2.0	0.0	0.0	1.0	0.0	4.0	1.5
3	8.5	6.5	1.5	0.5	2.5	2.0	0.0	0.0	1.0	0.5	3.0	1.0
4	9.0	6.0	1.0	0.5	2.0	1.5	0.0	0.0	1.5	1.0	1.5	0.5
5	9.0	6.5	0.5	0.5	1.5	0.0	0.0	0.0	1.5	0.0	2.5	1.0
6	9.0	8.0	0.5	0.5	1.0	0.0	0.0	0.0	1.0	0.0	2.0	0.0
7	9.0	8.0	0.5	0.5	2.0	1.0	0.0	0.0	0.5	0.0	0.5	0.0
8	8.5	6.5	1.0	0.5	2.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0
9	7.0	5.0	2.0	0.5	1.0	0.0	0.0	0.0	1.5	0.0	1.5	0.0
10	6.5	5.0	3.0	2.0	0.0	0.0	0.0	0.0	1.0	0.0	2.5	0.0
11	7.0	5.0	4.5	3.0	1.0	0.0	0.0	0.0	1.5	0.0	2.5	0.5
12	7.0	7.0	4.0	3.5	1.5	1.0	0.0	0.0	1.0	0.0	3.5	0.5
13	8.0	7.0	4.0	3.5	2.0	1.5	0.0	0.0	1.5	0.5	3.0	1.0
14	8.5	7.5	3.5	3.5	2.0	1.5	0.0	0.0	2.0	0.5	2.5	0.5
15	8.5	7.5	3.5	2.0	2.0	1.5	0.0	0.0	1.5	0.5	2.0	1.0
16	9.0	7.0	3.5	2.5	2.5	2.0	0.0	0.0	1.5	1.0	3.0	1.0
17	8.5	6.5	3.0	2.0	2.5	2.5	0.0	0.0	2.0	1.0	3.5	2.0
18	9.0	7.0	2.0	1.0	2.5	1.5	0.0	0.0	2.0	1.0	3.0	2.0
19	8.5	6.5	1.0	1.0	1.5	1.0	0.0	0.0	1.0	0.5	3.0	0.5
20	8.0	7.0	1.0	1.0	1.0	0.5	0.0	0.0	1.0	0.0	2.5	0.0
21	8.5	7.5	1.0	1.0	2.0	1.0	0.0	0.0	0.5	0.0	2.0	1.0
22	9.5	8.0	1.0	1.0	2.0	2.0	0.0	0.0	2.0	0.5	4.0	1.0
23	9.0	8.0	1.0	1.0	2.0	2.0	0.0	0.0	1.5	0.0	4.0	1.0
24	8.0	8.0	1.0	1.0	2.0	1.0	0.0	0.0	1.5	0.0	4.0	2.0
25	8.0	7.0	1.0	1.0	1.0	1.0	0.5	0.0	1.0	0.0	5.5	2.5
26	7.0	5.5	1.0	1.0	1.0	0.5	1.0	0.5	2.0	0.5	6.5	4.5
27	6.5	6.0	1.5	1.0	0.5	0.0	1.0	0.5	2.5	1.0	6.5	4.0
28	7.0	6.5	3.0	1.5	0.0	0.0	0.5	0.5	2.5	1.0	6.0	4.5
29	7.0	6.5	3.0	2.5	0.0	0.0	1.0	0.5	---	---	4.5	3.5
30	7.0	6.0	3.0	2.5	0.0	0.0	1.0	0.0	---	---	4.0	3.0
31	6.0	5.5	---	---	0.0	0.0	0.0	0.0	---	---	5.0	3.0
MONTH	11.0	5.0	5.5	0.5	3.0	0.0	1.0	0.0	2.5	0.0	6.5	0.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.0	3.0	7.0	6.0	9.5	6.0	12.0	9.5	19.0	16.0	17.0	13.0
2	5.0	3.0	6.5	5.0	9.5	7.0	11.5	9.5	19.0	16.0	17.0	12.0
3	4.5	4.0	8.5	5.0	9.0	7.0	11.5	10.0	19.0	16.0	17.0	12.0
4	5.0	3.5	9.5	6.5	8.0	6.5	11.0	10.0	19.0	16.0	16.0	13.0
5	6.0	3.5	9.5	7.0	8.5	6.5	10.0	9.5	19.5	16.0	17.0	13.5
6	5.5	4.5	9.5	7.5	7.0	6.0	11.5	9.5	19.5	16.5	17.5	13.0
7	5.0	3.5	9.0	7.5	7.0	6.0	12.0	10.0	18.0	15.5	16.5	13.0
8	7.0	3.0	8.5	6.0	8.0	6.0	12.5	10.5	17.5	15.0	16.5	13.0
9	6.5	4.5	8.0	7.0	9.0	6.0	11.5	10.5	16.0	14.0	15.5	13.5
10	7.0	4.5	7.5	6.5	10.0	6.5	12.5	10.5	16.0	14.0	13.5	12.5
11	6.5	5.0	7.0	6.0	10.5	6.5	12.5	11.5	15.5	13.5	12.5	11.5
12	5.5	4.0	7.0	6.0	10.0	7.0	12.0	10.5	16.0	14.0	13.5	10.5
13	7.5	4.0	7.0	6.5	10.0	6.5	14.0	11.0	16.5	14.0	13.5	9.5
14	8.5	4.0	7.0	6.0	9.0	5.5	15.0	12.0	16.5	14.0	13.5	10.5
15	9.0	4.5	7.0	6.0	9.5	6.5	15.0	13.0	16.0	12.5	14.5	11.0
16	8.0	5.0	7.0	5.5	9.0	7.0	14.5	12.5	16.5	13.5	14.5	11.0
17	8.0	4.0	7.0	6.0	8.5	8.0	14.0	12.5	18.0	14.5	14.5	11.5
18	7.0	5.0	7.0	6.5	9.5	8.0	16.5	13.0	18.0	15.0	14.0	11.5
19	7.5	5.0	10.0	6.0	9.0	7.5	16.5	14.0	16.0	15.0	14.5	12.0
20	6.5	5.0	9.5	6.5	8.5	8.0	17.0	14.0	17.0	15.5	14.0	11.0
21	6.0	4.0	9.5	7.0	9.5	8.0	16.5	13.5	17.5	15.5	13.5	10.5
22	7.5	4.5	10.5	7.0	10.5	8.0	16.0	14.0	17.5	15.0	13.5	10.5
23	8.5	5.5	10.0	7.0	12.0	9.0	16.5	13.0	17.0	15.0	13.5	10.5
24	10.0	6.5	8.0	7.0	11.5	8.5	17.0	13.5	17.0	15.0	13.0	10.0
25	9.0	7.0	8.0	7.0	11.0	8.5	18.0	13.5	18.0	15.0	14.0	10.0
26	7.5	6.0	9.0	7.0	11.0	9.0	17.5	14.0	18.5	16.0	13.0	10.5
27	6.0	5.5	8.5	6.5	10.0	8.5	17.5	14.5	18.5	16.0	10.5	9.0
28	6.0	5.0	9.5	6.5	10.0	8.5	18.5	14.5	19.0	16.0	11.0	9.5
29	7.5	5.5	8.5	6.5	10.0	8.5	18.5	15.0	19.0	16.0	11.0	8.5
30	7.5	6.5	8.0	6.5	12.0	9.0	19.0	15.5	18.5	15.0	10.5	8.0
31	---	---	9.0	6.5	---	---	19.5	16.0	17.0	14.5	---	---
MONTH	10.0	3.0	10.5	5.0	12.0	5.5	19.5	9.5	19.5	12.5	17.5	8.0
YEAR	19.5	0.0										

12301600 LAKE KOOCANUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.

LOCATION.--Lat 48°49'37", long 115°15'58", in E½SW¼NE¼ sec.6, T.35 N., R.28 W., Lincoln County, in middle of old channel 0.6 mi (1.0 km) downstream from Pinkham Creek, and 6.5 mi (10.5 km) northeast of Rexford.

PERIOD OF RECORD.--Chemical analyses: June 1972 to September 1974.

REMARKS.--Additional vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office. When station was inaccessible, Lake Koocanusa near Rexford, Mt. (station 12301500) was used as alternate site.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	ELEVATION ABOVE MEAN SEA LEVEL (FT)	DEPTH (FT)	TOTAL NITROGEN (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.										
04...	1030	2380	130	.29	.01	.02	.26	.03	.03	.03
04...	1100	2380	10	.25	.01	.00	.24	.01	.01	.03
09...	1200	2378	122	.10	.01	.05	.06	.04	.06	.05
09...	1230	2378	10	.16	.00	.01	.13	.03	.01	.05
15...	1230	2376	119	.30	.00	.03	.27	.03	.03	.06
15...	1300	2376	10	.18	.00	.03	.16	.02	.03	.05
23...	1230	2372	115	.26	.00	.05	.21	.05	.05	.10
23...	1300	2372	10	.23	.00	.02	.21	.02	.02	.06
30...	0830	2370	115	--	.01	.02	--	.03	.03	.27
30...	0900	2370	10	.13	.03	.00	.09	.04	.03	.20
NOV.										
12...	1230	2365	112	.37	.00	.04	.31	.06	.04	.18
12...	1300	2365	10	.23	.00	.03	.19	.04	.03	.12
27...	1230	2364	1.0	.16	.01	.05	.08	.08	.06	.05
30...	1030	2365	110	.24	.01	.06	.14	.10	.07	.10
30...	1100	2365	10	.26	.02	.09	.15	.11	.11	.09
DEC.										
04...	1230	2365	110	.18	.00	.06	.10	.08	.06	.06
04...	1300	2365	10	.14	.00	.06	.06	.08	.06	.04
12...	1030	2365	1.0	.33	.00	.13	.20	.13	.13	.07
20...	1300	2367	1.0	.27	.01	.05	.21	.06	.06	.05
27...	1515	2368	1.0	.17	.00	.08	.09	.08	.08	.09
JAN.										
04...	1230	2368	1.0	.24	.00	.13	.11	.13	.13	.06
10...	1030	2362	1.0	.67	.00	.09	.39	.28	.09	.06
17...	1300	2358	1.0	.22	.00	.13	.07	.15	.13	.02
24...	1500	2361	1.0	--	.01	.07	--	.09	.08	.04
31...	1400	2360	1.0	.54	.01	.10	.35	.19	.11	.05
FEB.										
05...	1500	2354	1.0	.36	.00	.19	.15	.21	.19	.07
13...	1100	2347	1.0	.42	.02	.17	.16	.26	.19	.07
21...	1400	2337	1.0	.24	.00	.18	.06	.18	.18	.08
26...	1300	2330	1.0	.52	.00	.23	.27	.25	.23	.08
MAR.										
07...	1430	2319	1.0	.41	.00	.17	.24	.17	.17	.11
14...	1330	2311	1.0	.21	.00	.16	.05	.16	.16	.15
21...	1130	2306	1.0	.34	.00	.08	.25	.09	.08	.18
29...	1000	2306	1.0	.38	.01	.07	.29	.09	.08	.13
APR.										
04...	1500	2306	1.0	.41	.01	.01	.37	.04	.02	.07
11...	1100	2305	1.0	.51	.00	.08	.43	.08	.08	.04
18...	1130	2306	1.0	.35	.00	.04	.27	.08	.04	.06
24...	1100	2306	52	.40	.02	.07	.31	.09	.09	.06
24...	1130	2306	10	.46	.01	.04	.41	.05	.05	.06
MAY										
03...	1000	2307	10	.26	.01	.14	.11	.15	.15	.05
03...	1030	2307	57	.23	.00	.13	.10	.13	.13	.04
09...	1000	2314	60	.30	.00	.10	.20	.10	.10	.07
09...	1030	2314	10	.36	.00	.12	.24	.12	.12	.07
17...	0930	2327	72	--	.00	.14	--	--	.14	.06
17...	1000	2327	10	.37	.00	.14	.23	.14	.14	.06
22...	1030	2328	76	.29	.01	.12	.17	.12	.13	.11
22...	1100	2328	10	.31	.02	.12	.17	.14	.14	.17
30...	1000	2341	90	.30	.00	.15	.16	.14	.15	.03
30...	1030	2341	10	.24	.00	.12	.13	.11	.12	.03

DATE	TIME	DEPTH (FT)	TOTAL KJEL. NITROGEN IN BOTTOM DEP. (MG/KG)	TOTAL PHOSPHORUS IN BOTTOM DEPOSITS (MG/KG)	TOTAL ARSENIC IN BOTTOM DEPOSITS (UG/G)	TOTAL BORON IN BOTTOM DEPOSITS (UG/G)	TOTAL CADMIUM IN BOTTOM DEPOSITS (UG/G)
MAY							
22...	1130	86	750	44	6	9	<10

DATE	TOTAL CHROMIUM IN BOTTOM DEPOSITS (UG/G)	TOTAL IRON IN BOTTOM DEPOSITS (UG/G)	TOTAL LEAD IN BOTTOM DEPOSITS (UG/G)	TOTAL MANGANESE IN BOTTOM DEPOSITS (UG/G)	TOTAL MERCURY IN BOTTOM DEPOSITS (UG/G)	TOTAL ZINC IN BOTTOM DEPOSITS (UG/G)
MAY						
22...	6	9800	40	730	.0	130

12301600 LAKE KOOCANUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	CHEM-ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	ORGANIC NITRO-GEN (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)
OCT.											
04...	1030	130	.5	7	.23	.03	.05	.6	4.8	4	0
04...	1100	10	.4	4	.20	.04	.05	.4	4.3	0	0
NOV.											
30...	1030	110	1.5	5	.11	.03	.05	.6	5.0	4	0
30...	1100	10	1.8	5	.14	.01	.04	.5	4.6	5	100
APR.											
24...	1100	52	2.5	0	.20	.11	.04	1.2	6.3	6	400
24...	1130	10	4.0	0	.33	.08	.04	1.2	6.3	1	200
MAY											
22...	1030	76	1.0	8	.07	.10	.07	.5	6.2	1	0
22...	1100	10	.8	5	.09	.08	.07	.6	5.9	1	0

DATE	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	CYANIDE (CN) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.										
04...	0	0	3	.01	20	1	8	.0	0	20
04...	0	0	1	.00	10	1	0	.0	0	20
NOV.										
30...	0	0	0	.00	30	2	20	.0	0	20
30...	0	0	0	.00	30	2	0	.0	0	20
APR.										
24...	0	0	6	.00	50	1	2000	.0	2	30
24...	0	30	2	.00	30	0	70	.0	1	20
MAY										
22...	0	0	3	.00	10	2	40	.0	4	20
22...	0	0	4	.00	20	1	40	.0	1	40

DATE	TIME	DEPTH (FT)	ALDRIN IN BOTTOM DE-POSITS (UG/KG)	LINDANE IN BOTTOM DE-POSITS (UG/KG)	CHLOR-DANE IN BOTTOM DE-POSITS (UG/KG)	DDD IN BOTTOM DE-POSITS (UG/KG)	DDE IN BOTTOM DE-POSITS (UG/KG)
MAY							
22...	1130	86	.0	.0	0	.0	.0

DATE	DDT IN BOTTOM DE-POSITS (UG/KG)	DI-ELDRIN IN BOTTOM DE-POSITS (UG/KG)	ENDRIN IN BOTTOM DE-POSITS (UG/KG)	HEPTA-CHLOR IN BOTTOM DE-POSITS (UG/KG)	HEPTA-CHLOR EPOXIDE IN BOT-TOM DE-POSITS (UG/KG)	PCB IN BOTTOM DE-POSITS (UG/KG)
MAY						
22...	.0	.0	.0	.0	.0	0

DATE	TIME	DEPTH (FT)	DIS-SOLVED URANIUM (U) (UG/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILT-RABLE RESIDUE (MG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)
MAY												
22...	1030	76	.62	.07	2.9	2.0	2.4	150	.4	.6	.6	7
22...	1100	10	.60	.05	3.3	1.8	2.2	160	.4	.8	.9	9

12301600 LAKE KOOCANUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ALDRIN (UG/L)	LINDANE (UG/L)	CHLOR-DANE (UG/L)	DDD (UG/L)	DDE (UG/L)	DDT (UG/L)
MAY								
22...	1030	76	.00	.00	.0	.00	.00	.00
22...	1100	10	.00	.00	.0	.00	.00	.00

DATE	DI-ELDRIN (UG/L)	ENDRIN (UG/L)	HEPTA-CHLOR (UG/L)	HEPTA-CHLOR EPOXIDE (UG/L)	PCB (UG/L)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
MAY								
22...	.00	.00	.00	.00	.0	.00	.00	.00
22...	.00	.00	.00	.00	.0	.00	.00	.00

DATE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
OCT.							
04...	1030	130	12.8	260	7.8	105	--
04...	1100	10	14.7	235	7.9	98	--
09...	1200	122	12.8	260	7.7	108	--
09...	1230	10	13.8	230	8.0	109	--
15...	1230	119	11.3	255	7.8	108	37
15...	1300	10	12.9	235	7.9	102	12
23...	1230	115	9.2	265	7.7	113	--
23...	1300	10	12.9	230	8.0	99	--
30...	0830	115	10.2	255	7.8	107	--
30...	0900	10	11.4	235	7.9	102	--
NOV.							
12...	1230	112	6.0	245	7.9	106	--
12...	1300	10	8.4	235	7.9	104	--
27...	1230	1.0	7.0	255	7.8	102	--
30...	1030	110	4.8	225	8.0	100	40
30...	1100	10	7.0	225	8.0	100	110
DEC.							
04...	1230	110	4.8	225	8.0	104	--
04...	1300	10	6.4	230	8.0	100	--
12...	1030	1.0	6.0	240	8.2	103	--
20...	1300	1.0	4.0	245	8.1	104	--
27...	1515	1.0	4.0	290	8.2	106	--
JAN.							
04...	1230	1.0	1.5	--	8.1	111	--
10...	1030	1.0	2.0	275	8.2	114	--
17...	1300	1.0	3.0	265	8.1	110	--
24...	1500	1.0	2.5	265	8.2	108	--
31...	1400	1.0	1.5	280	8.2	111	--
FEB.							
05...	1500	1.0	2.0	290	8.2	118	--
13...	1100	1.0	1.0	280	8.2	119	--
21...	1400	1.0	.5	280	8.1	119	--
26...	1300	1.0	1.5	295	8.1	124	--
MAR.							
07...	1430	1.0	1.0	290	8.0	121	--
14...	1330	1.0	2.5	295	8.0	123	--
21...	1130	1.0	2.4	310	8.2	126	--
29...	1000	1.0	4.5	300	8.1	124	--
APR.							
04...	1500	1.0	5.0	305	8.1	137	--
11...	1100	1.0	7.0	310	8.6	132	--
18...	1130	1.0	9.5	305	8.8	128	--
24...	1100	52	7.8	265	8.4	124	22
24...	1130	10	8.8	265	8.4	122	160
MAY							
03...	1000	10	7.8	210	8.3	117	--
03...	1030	57	7.8	210	8.3	115	--
09...	1000	60	8.9	190	8.1	100	--
09...	1030	10	8.9	200	8.2	104	--
17...	0930	72	7.2	200	8.2	104	--
17...	1000	10	7.4	195	8.1	105	--
22...	1030	76	7.5	210	8.2	113	34
22...	1100	10	7.6	210	8.2	111	22
30...	1000	98	9.2	185	8.3	99	--
30...	1030	10	10.5	215	8.4	106	--

12301600 LAKE KOOCANUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ELEVATION ABOVE MEAN SEA LEVEL (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)
JUNE										
11...	1115	113	2367	8.8	214	10.5	8.3	96	.23	.01
11...	1245	10	2367	10.5	216	10.8	8.3	95	.28	.02
11...	1315	5.0	2367	10.7	--	--	8.3	94	.23	.02
11...	1330	1.0	2367	10.7	--	--	8.3	94	.25	.03
JULY										
10...	1015	195	2447	9.3	165	9.2	7.9	91	.15	.03
10...	1045	10	2447	14.3	170	9.0	8.2	87	.01	.12
10...	1100	3.6	2447	14.9	170	8.9	8.2	86	.15	.04
10...	1115	.3	2447	15.0	170	8.9	8.2	86	.08	.11
24...	1130	201	2459	10.0	160	8.8	7.8	89	.06	.03
24...	1145	10	2459	17.4	175	8.9	8.4	86	.07	.02
24...	1315	17	2459	16.8	165	9.2	8.4	86	.05	.08
24...	1330	2.9	2459	17.8	175	8.9	8.4	86	.08	.02
AUG.										
07...	1030	203	2458	10.0	160	8.5	8.2	88	.29	.07
07...	1045	26	2458	17.6	170	8.9	8.4	85	.06	.08
07...	1100	10	2458	18.8	170	8.7	8.4	87	.09	.10
07...	1115	1.0	2458	19.0	170	8.7	8.5	86	.16	.08
21...	1130	208	2459	10.2	140	8.0	8.1	87	.01	.13
21...	1200	10	2459	16.6	150	8.4	8.3	87	.03	.11
21...	1215	35	2459	16.0	150	8.2	8.3	87	.03	.09
21...	1230	2.5	2459	16.7	150	8.4	8.3	87	.08	.10
SEP.										
05...	1100	202	2458	10.2	160	7.4	7.8	88	.06	.12
05...	1115	10	2458	17.2	175	8.5	8.1	87	.10	.04
05...	1130	35	2458	17.0	170	8.1	8.0	88	.10	.06
05...	1145	1.0	2458	17.5	175	8.2	8.1	88	.17	.06
18...	1100	196	2458	10.1	160	7.3	8.0	90	.17	.10
18...	1130	10	2458	15.8	175	8.8	8.3	88	.03	.24
18...	1145	34	2458	15.5	175	8.6	8.3	88	.16	.03
18...	1200	1.2	2458	15.9	175	8.8	8.3	88	.03	.09

DATE	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)
JUNE									
11...	.02	.05	.24	.07	.02	.02	2.5	--	--
11...	.01	.07	.30	.08	.07	.02	2.9	.8	2.2
11...	.01	.06	.25	.07	.08	.03	2.3	.0	4.4
11...	.00	.06	.28	.06	.06	.02	2.4	.1	2.7
JULY									
10...	.00	.00	.18	.00	.12	.00	2.2	--	--
10...	.00	.00	.13	.00	.07	.00	2.3	1.3	1.8
10...	.00	.02	.19	.02	.06	.00	2.8	1.7	.5
10...	.00	.05	.19	.05	.05	.00	3.1	.2	.0
24...	.00	.05	.09	.05	.06	.01	2.5	--	--
24...	.00	.00	.09	.00	.02	.01	2.4	.7	3.4
24...	.00	.01	.13	.01	.02	.02	1.7	1.1	.2
24...	.00	.00	.10	.00	.04	.03	1.9	.8	.6
AUG.									
07...	.00	.07	.36	.07	.06	.01	2.6	--	--
07...	.00	.01	.14	.01	.01	.01	--	.1	.0
07...	.00	.03	.19	.03	.02	.01	3.1	.4	.0
07...	.00	.01	.24	.01	.01	.00	3.4	.0	.0
21...	.00	.12	.14	.12	.04	.01	2.7	--	--
21...	.00	.01	.14	.01	.01	.00	1.6	.0	.9
21...	.00	.00	.12	.00	.00	.01	1.5	.0	1.0
21...	.00	.00	.18	.00	.01	.00	2.3	.9	.0
SEP.									
05...	.00	.11	.18	.11	.07	.00	4.1	--	--
05...	.01	.00	.14	.00	.03	.00	2.1	.8	.4
05...	.00	.00	.16	.00	.03	.01	2.4	.7	.0
05...	.00	.00	.23	.00	.03	.01	3.4	.8	.0
18...	.00	.09	.27	.09	.04	.01	--	--	--
18...	.00	.01	.27	.01	.00	.00	1.3	.0	.0
18...	.00	.00	.19	.00	.00	.00	3.8	.8	1.1
18...	.01	.00	.12	.00	.00	.00	6.4	.0	.0

12301600 LAKE KOOCAMUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
JUNE											
11...	1115	113	5.4	30	7.3	1.6	.5	117	0	12	1.1
11...	1245	10	5.6	30	8.0	1.9	.7	116	0	14	1.5
JULY											
10...	1015	195	5.3	29	7.4	1.3	.5	111	0	13	1.4
10...	1045	10	5.0	28	7.3	1.3	.6	106	0	13	1.5
24...	1130	201	5.0	29	7.0	1.4	.7	110	0	12	1.0
24...	1145	10	4.0	28	7.3	1.4	.8	105	1	13	1.3
AUG.											
07...	1030	203	4.9	28	7.2	1.0	.6	108	0	12	1.0
07...	1100	10	4.8	29	6.6	1.3	.6	107	0	14	1.3
21...	1130	208	4.8	28	6.9	1.4	.6	110	0	11	1.3
21...	1200	10	4.4	28	7.7	1.6	.5	109	0	11	1.6
SEP.											
05...	1100	202	5.0	29	6.4	1.2	.5	110	0	11	1.1
05...	1115	10	4.4	28	7.0	1.6	.6	109	0	12	1.7
18...	1100	198	5.3	30	6.7	1.5	.3	110	0	11	1.6
18...	1130	10	4.5	28	7.2	1.6	.7	111	0	13	1.9

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
JUNE											
11...	.3	120	110	9	.1	.9	7	.7	60	1	0
11...	.4	128	110	13	.1	.9	20	1.3	120	1	60
JULY											
10...	.2	116	100	12	.1	2.2	10	2.7	20	3	20
10...	.2	110	100	13	.1	1.1	10	1.4	30	3	20
24...	.2	111	100	11	.1	2.8	20	.3	10	2	50
24...	.2	113	100	12	.1	.7	4	.8	30	4	10
AUG.											
07...	.2	105	100	11	.0	1.1	7	.6	0	4	20
07...	.2	114	100	12	.1	.7	1	.8	0	1	20
21...	.2	113	98	8	.1	1.4	7	.4	10	1	20
21...	.2	115	100	12	.1	.9	3	.7	10	0	10
SEP.											
05...	.2	103	99	9	.1	2.8	8	.4	20	1	20
05...	.2	103	99	9	.1	1.4	2	.7	20	1	20
18...	.3	111	100	12	.1	1.8	5	.5	20	2	90
18...	.3	112	100	9	.1	.9	2	.3	20	1	50

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MOLYB-DENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE											
11...	2	40	0	20	500	2	960	<100	40	0	30
11...	2	30	0	30	500	1	--	<100	30	0	130
JULY											
10...	1	0	0	20	900	4	1100	<100	20	0	40
10...	3	10	0	10	500	4	400	<100	10	0	30
24...	1	0	0	0	900	3	1100	<100	40	0	20
24...	1	0	0	0	200	2	200	<100	0	0	20
AUG.											
07...	0	0	0	0	400	4	650	<100	20	0	0
07...	0	0	0	0	100	1	70	<100	0	0	10
21...	2	0	0	20	600	1	560	<100	10	0	10
21...	2	0	0	10	200	0	70	<100	0	0	70
SEP.											
05...	0	10	0	10	400	1	520	<100	20	0	20
05...	0	0	0	0	200	1	30	<100	0	3	20
18...	0	0	0	20	300	1	460	<100	0	1	10
18...	0	0	1	20	200	0	80	<100	0	1	20

12301600 LAKE KOOCANUSA BELOW PINKHAM CREEK, NEAR REXFORD, MT.--Continued

SELECTED VERTICAL PROFILES

MAY 22

DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS-MISS-IBILITY (PER-CENT)
0	7.7	210	10.6	8.2	--
1	7.7	210	10.6	8.2	<1
2	7.7	210	10.6	8.2	<1
5	7.7	210	10.6	8.2	<1
10	7.6	210	10.6	8.2	<1
15	7.6	210	10.8	8.2	<1
20	7.6	210	10.8	8.2	<1
25	7.5	210	10.8	8.2	<1
30	7.5	210	10.8	8.2	<1
35	7.5	210	10.9	8.2	<1
40	7.5	210	10.8	8.2	<1
45	7.5	210	10.8	8.2	<1
50	7.5	210	10.8	8.2	<1
55	7.5	210	10.8	8.2	<1
60	7.5	210	10.8	8.2	<1
65	7.5	210	11.0	8.2	<1
70	7.5	210	10.8	8.2	<1
76	7.5	210	10.6	8.2	<1
86	7.3	210	10.6	8.2	<1

AUG. 21

DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS-MISS-IBILITY (PER-CENT)
0	16.8	150	8.5	8.3	--
1	16.8	150	8.4	8.3	35
2	16.7	150	8.4	8.3	35
5	16.6	150	8.4	8.3	35
10	16.6	150	8.4	8.3	35
15	16.6	150	8.4	8.3	35
20	16.5	150	8.4	8.3	35
25	16.5	150	8.4	8.3	35
30	16.2	150	8.4	8.3	35
35	16.0	150	8.2	8.3	30
40	15.1	150	7.8	8.2	23
45	14.6	150	7.7	8.1	18
50	14.1	150	7.8	8.1	17
60	13.3	145	7.9	8.1	11
70	12.8	145	8.2	8.1	5
80	12.2	145	8.3	8.2	4
90	11.8	145	8.5	8.2	<1
100	11.7	145	8.6	8.2	<1
110	11.4	145	8.6	8.2	<1
120	11.2	145	8.6	8.2	<1
130	11.1	140	8.6	8.2	<1
140	10.9	140	8.7	8.2	<1
150	10.5	140	8.5	8.1	<1
165	10.3	140	8.2	8.1	<1
180	10.2	140	8.1	8.1	<1
195	10.2	140	8.0	8.1	<1
208	10.2	140	8.0	8.1	<1
218	10.2	140	8.0	8.1	<1

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT.	
04...	80
NOV.	
30...	12
APR.	
24...	75
MAY	
22...	2.1
JUNE	
11...	18
JULY	
10...	28
24...	79
AUG.	
07...	170
21...	130
SEPT.	
05...	96
18...	130

(Carbon-14, light and dark bottle method)

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.

LOCATION.--Lat 48°35'06", long 115°13'52", in NW¼NE¼NW¼ sec.33, T.33 N., R.28 W., Lincoln County, in middle of old channel at Tenmile Creek, and 20.1 mi (32.3 km) northeast of Libby.

PERIOD OF RECORD.--Chemical analyses: June 1972 to September 1974.

REMARKS.--Additional vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	ELE- VATION ABOVE MEAN SEA LEVEL (FT)	DEPTH (FT)	TOTAL NITRO- GEN (N) (MG/L)	DIS- SOLVED NITRITE (N) (MG/L)	DIS- SOLVED NITRATE (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L)
OCT.										
02...	1030	2381	186	.34	.00	.14	.17	.17	.14	.10
02...	1100	2381	10	.20	.00	.01	.18	.02	.01	.08
10...	1100	2378	182	.15	.00	.08	.08	.07	.08	.07
10...	1130	2378	10	.07	.01	.01	.05	.02	.02	.05
16...	1330	2375	180	.41	.00	.19	.20	.21	.19	.07
16...	1400	2375	10	.10	.01	.01	.07	.03	.02	.05
24...	1130	2372	178	.28	.01	.02	.21	.07	.03	.04
24...	1200	2372	10	.51	.00	.12	.28	.23	.12	.03
29...	1330	2371	177	.35	.01	.07	.27	.08	.08	.07
29...	1400	2371	10	.36	.01	.03	.09	.27	.04	.06
NOV.										
13...	1230	2665	10	.17	.00	.05	.12	.05	.05	.06
13...	1300	2665	170	.07	.01	.02	.03	.04	.03	.05
29...	1030	2364	170	.26	.01	.06	.18	.08	.07	.10
29...	1100	2364	10	.26	.00	.06	.18	.08	.06	.05
DEC.										
05...	1230	2365	170	.38	.01	.07	.28	.10	.08	.06
05...	1300	2365	10	.26	.03	.03	.15	.11	.06	.06
19...	1300	2367	173	.33	.00	.04	.27	.06	.04	.07
19...	1330	2367	10	.23	.01	.05	.16	.07	.06	.05
APR.										
03...	1430	2306	118	.37	.00	.03	.28	.09	.03	.12
03...	1500	2306	10	.33	.00	.03	.23	.10	.03	.06
10...	1330	2306	114	.44	.00	.20	.24	.20	.20	.12
10...	1400	2306	10	.54	.00	.13	.41	.13	.13	.10
17...	1300	2306	116	.27	.00	.04	.23	.04	.04	.11
17...	1330	2306	10	--	.00	.08	--	.08	.08	.15
25...	1030	2306	116	.26	.01	.03	.21	.05	.04	.13
25...	1100	2306	10	.29	.01	.06	.24	.05	.07	.05
MAY										
02...	1330	2307	117	.30	.00	.05	.25	.05	.05	.11
02...	1400	2307	10	.22	.00	.08	.14	.08	.08	.05
08...	1330	2311	115	1.2	.01	.08	1.1	.09	.09	.12
08...	1400	2311	10	.32	.01	.04	.27	.05	.05	.05
16...	1230	2327	133	.31	.00	.07	.24	.07	.07	.09
16...	1300	2327	10	.17	.00	.03	.13	.04	.03	.04
23...	1000	2329	140	.37	.01	.12	.22	.15	.13	.07
23...	1030	2329	10	.28	.00	.08	.20	.08	.08	.05
29...	1330	2339	147	.58	.00	.12	.47	.11	.12	.07
29...	1400	2339	10	.52	.00	.02	.50	.02	.02	.03

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	BIO-CHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)
OCT.											
02...	1030	186	.4	7	.17	.00	.09	.4	5.4	0	0
02...	1100	10	.7	9	.15	.03	.07	.4	4.2	1	0
NOV.											
29...	1030	170	1.6	2	.14	.04	.05	.6	4.6	3	0
29...	1100	10	1.8	2	.16	.02	.05	.5	4.8	3	0
APR.											
25...	1030	116	1.0	8	.09	.12	.08	1.2	6.0	2	200
25...	1100	10	1.3	10	.16	.08	.01	1.3	5.1	1	400
MAY											
23...	1000	140	.8	11	.10	.12	.04	.8	5.6	1	0
23...	1030	10	1.0	11	.16	.04	.03	.5	6.3	1	0

DATE	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	CYANIDE (CN) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.										
02...	0	0	1	.00	10	2	8	.4	0	20
02...	0	0	1	.00	10	4	8	.0	0	10
NOV.										
29...	0	0	2	.00	30	0	0	.1	1	0
29...	0	0	2	.00	20	0	0	.3	4	0
APR.										
25...	0	20	3	.00	190	0	60	.0	1	80
25...	0	20	2	.00	10	0	30	.0	1	40
MAY										
23...	0	0	1	.00	20	0	10	.0	0	10
23...	0	0	68	.00	20	1	120	.0	0	0

DATE	TIME	DEPTH (FT)	TOTAL NITROGEN IN BOTTOM DEPOSITS (N) (MG/KG)	TOTAL KJEL. NITROGEN IN BOTTOM DEP. (MG/KG)	TOTAL PHOSPHORUS IN BOTTOM DEPOSITS (MG/KG)	TOTAL ARSENIC IN BOTTOM DEPOSITS (UG/G)	TOTAL BORON IN BOTTOM DEPOSITS (UG/G)
OCT.							
02...	1300	196	.0	--	129	8	5
MAY							
23...	1130	150	--	920	160	7	9

DATE	TOTAL CADMIUM IN BOTTOM DEPOSITS (UG/G)	TOTAL CHROMIUM IN BOTTOM DEPOSITS (UG/G)	TOTAL IRON IN BOTTOM DEPOSITS (UG/G)	TOTAL LEAD IN BOTTOM DEPOSITS (UG/G)	TOTAL MANGANESE IN BOTTOM DEPOSITS (UG/G)	TOTAL MERCURY IN BOTTOM DEPOSITS (UG/G)	TOTAL ZINC IN BOTTOM DEPOSITS (UG/G)
OCT.							
02...	0	20	24000	35	970	.0	186
MAY							
23...	<10	6	12000	50	1200	.0	170

DATE	TIME	DEPTH (FT)	ALDRIN (UG/L)	LINDANE (UG/L)	CHLORDANE (UG/L)	DDD (UG/L)	DDE (UG/L)	DDT (UG/L)
OCT.								
02...	1030	186	.00	.00	.0	.00	.00	.00
02...	1100	10	.00	.00	.0	.00	.00	.00
MAY								
23...	1000	140	.00	.00	.0	.00	.00	.00
23...	1030	10	.00	.00	.0	.00	.00	.00

DATE	DIELDRIN (UG/L)	ENDRIN (UG/L)	HEPTACHLOR (UG/L)	HEPTACHLOR EPOXIDE (UG/L)	PCB (UG/L)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
OCT.								
02...	.00	.00	.00	.00	.0	.00	.00	.00
02...	.00	.00	.00	.00	.0	.00	.00	.00
MAY								
23...	.00	.00	.00	.00	.0	.00	.00	.00
23...	.00	.00	.00	.00	.0	.00	.00	.00

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ALDRIN IN BOTTOM DE-POSITS (UG/KG)	LINDANE IN BOTTOM DE-POSITS (UG/KG)	CHLOR-DANE IN BOTTOM DE-POSITS (UG/KG)	DDD IN BOTTOM DE-POSITS (UG/KG)	DDE IN BOTTOM DE-POSITS (UG/KG)
OCT.							
02...	1300	196	.0	.0	0	.0	.0
MAY							
23...	1130	150	.0	.0	0	.0	.0

DATE	DDT IN BOTTOM DE-POSITS (UG/KG)	DI-ELDRIN IN BOTTOM DE-POSITS (UG/KG)	ENDRIN IN BOTTOM DE-POSITS (UG/KG)	HEPTA-CHLOR IN BOTTOM DE-POSITS (UG/KG)	HEPTA-CHLOR EPOXIDE IN BOT-TOM DE-POSITS (UG/KG)	PCB IN BOTTOM DE-POSITS (UG/KG)
OCT.						
02...	.0	.0	.0	.0	.0	0
MAY						
23...	.0	.0	.0	.0	.0	0

DATE	TIME	DEPTH (FT)	DIS-SOLVED URANIUM (U) (UG/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILT-RABLE RESIDUE (MG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)
OCT.												
02...	1030	186	.55	.04	3.8	1.5	1.8	140	<.4	<.4	.4	2
02...	1100	10	.57	.04	3.2	1.8	2.2	130	<.4	<.4	<.4	2
MAY												
23...	1000	140	.67	.05	2.0	1.8	2.2	150	1.6	.9	1.1	14
23...	1030	10	.67	.05	2.9	1.6	2.0	150	<.4	.6	.7	5

DATE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
OCT.							
02...	1030	186	11.0	205	7.2	94	--
02...	1100	10	15.8	215	7.9	94	--
10...	1100	182	11.2	220	7.2	93	--
10...	1130	10	14.7	225	7.9	92	--
16...	1330	180	11.0	220	7.2	98	7
16...	1400	10	14.0	225	7.9	96	5
24...	1130	178	11.2	250	7.7	106	--
24...	1200	10	13.4	230	7.8	98	--
29...	1330	177	10.2	255	7.7	111	--
29...	1400	10	13.0	230	7.8	97	--
NOV.							
13...	1230	10	10.4	235	7.9	100	--
13...	1300	170	9.2	235	8.0	100	--
29...	1030	170	6.9	235	8.0	105	4
29...	1100	10	8.8	225	8.0	102	21
DEC.							
05...	1230	170	5.8	230	8.0	103	--
05...	1300	10	8.2	230	8.0	100	--
19...	1300	173	5.8	215	7.8	107	--
19...	1330	10	7.2	220	8.0	111	--
APR.							
03...	1430	118	2.7	265	8.2	124	--
03...	1500	10	2.6	260	8.3	122	--
10...	1330	114	3.0	270	8.2	124	--
10...	1400	10	3.2	265	8.3	119	--
17...	1300	116	4.1	275	8.4	120	--
17...	1330	10	4.1	260	8.2	120	--
25...	1030	116	4.3	265	8.3	121	8
25...	1100	10	7.3	265	8.4	118	1
MAY							
02...	1330	117	5.8	245	8.2	122	--
02...	1400	10	9.0	235	8.3	113	--
08...	1330	115	5.5	255	8.3	119	--
08...	1400	10	9.8	230	8.4	107	--
16...	1230	133	5.8	245	8.0	111	--
16...	1300	10	9.2	220	8.3	95	--
23...	1000	140	6.0	235	8.0	109	0
23...	1030	10	9.5	205	8.4	100	75
29...	1330	147	6.3	230	8.0	108	--
29...	1400	10	11.5	210	8.6	130	--

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ELEVATION ABOVE MEAN SEA LEVEL (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)
JUNE										
13...	1000	176	2372	7.8	195	9.2	7.8	103	.20	.12
13...	1030	10	2372	12.4	195	10.4	8.4	101	.32	.07
13...	1100	4.9	2372	12.7	200	10.2	8.5	97	.23	.05
13...	1115	1.4	2372	12.8	200	10.2	8.5	97	.24	.04
27...	1230	234	2434	8.0	190	8.8	7.6	101	.10	.07
27...	1300	17	2434	15.0	190	9.0	8.3	110	.15	.05
27...	1315	10	2434	17.6	190	9.0	8.5	99	.11	.01
27...	1345	3.4	2434	18.2	185	9.1	8.5	94	--	.01
JULY										
11...	1045	250	2448	8.2	180	7.8	8.0	87	.16	.03
11...	1100	10	2448	14.8	170	9.0	8.5	86	.01	.12
11...	1115	5.0	2448	14.9	170	8.8	8.5	86	.33	.05
11...	1130	.2	2448	14.9	170	8.8	8.5	86	.26	.04
25...	1130	260	2459	8.6	180	8.0	7.7	93	.09	.06
25...	1200	10	2459	16.8	165	8.9	8.4	85	.14	.05
25...	1300	19	2459	13.6	165	8.6	8.2	85	.00	.03
25...	1330	1.9	2459	18.4	170	9.2	8.4	85	.19	.06
AUG.										
08...	1045	260	2459	8.8	180	7.0	7.8	94	.16	.04
08...	1100	25	2459	16.9	165	8.3	8.2	85	.03	.26
08...	1130	10	2459	19.5	175	8.5	8.5	85	.16	.12
08...	1145	1.0	2459	19.6	175	8.3	8.5	91	.02	.26
22...	1300	259	2459	8.6	160	6.1	7.7	93	.02	.07
22...	1330	10	2459	17.5	150	8.7	8.4	85	.06	.18
22...	1400	31	2459	16.2	150	8.5	8.2	85	.03	.06
22...	1430	2.9	2459	17.8	150	8.7	8.4	85	.08	.07
SEP.										
03...	1145	262	2459	8.7	180	4.9	7.5	98	.12	.35
03...	1200	10	2459	17.0	170	8.4	8.0	89	.17	.93
03...	1230	35	2459	16.9	165	8.1	7.9	88	.16	.06
03...	1245	1.0	2459	17.2	170	8.2	8.0	88	.03	.17
19...	1130	258	2458	8.5	180	3.6	7.6	96	.00	.10
19...	1200	10	2458	16.0	175	8.7	8.3	88	.07	.03
19...	1300	38	2458	14.8	180	7.6	8.1	89	.11	.02
19...	1315	1.2	2458	16.0	175	8.5	8.3	87	.02	.05

DATE	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)
JUNE									
13...	.01	.46	.32	.47	.15	.15	1.8	--	--
13...	.00	.03	.39	.03	.13	.13	2.2	--	--
13...	.00	.01	.28	.01	.12	.08	1.7	--	--
13...	.00	.01	.28	.01	.06	.07	2.0	1.0	1.0
27...	.00	.14	.17	.14	.11	.01	--	--	--
27...	.00	.03	.20	.03	.03	.00	2.1	.6	.5
27...	.00	.00	.12	.00	.02	.00	4.2	.6	.4
27...	.01	.00	--	.00	--	.00	7.4	.2	.2
JULY									
11...	.00	.13	.19	.13	.07	.02	2.1	--	--
11...	.00	.00	.13	.00	.04	.00	2.0	1.0	.1
11...	.00	.00	.38	.00	.04	.01	2.7	1.2	.4
11...	.00	.01	.30	.01	.04	.01	3.3	1.3	.0
25...	.00	.13	.15	.13	.06	.03	2.7	--	--
25...	.00	.01	.19	.01	.02	.01	3.2	1.0	.1
25...	.00	.01	.00	.01	.03	.01	3.4	1.0	.5
25...	.00	.02	.25	.02	.02	.01	3.5	.7	.7
AUG.									
08...	.00	.13	.20	.13	.07	.01	4.9	--	--
08...	.00	.01	.29	.01	.05	.01	2.1	4.2	6.2
08...	.00	.01	.28	.01	.03	.00	2.1	.0	.0
08...	.00	.00	.28	.00	.03	.00	4.1	.1	.0
22...	.00	.17	.09	.17	.06	.01	2.2	--	--
22...	.00	.01	.24	.01	.01	.00	5.5	.8	.0
22...	.00	.00	.09	.00	.01	.00	2.0	.7	.2
22...	.00	.00	.15	.00	.00	.00	4.4	.0	.0
SEP.									
03...	.00	.17	.47	.17	.06	.01	2.9	--	--
03...	.00	.03	1.1	.03	.00	.00	2.5	.0	.0
03...	.00	.00	.22	.00	.00	.01	3.8	.0	.0
03...	.00	.01	.20	.01	.00	.00	2.9	.4	.5
19...	.00	.20	.10	.20	.06	.01	2.3	--	--
19...	.11	.00	.10	.01	.04	.00	1.3	.6	.9
19...	.00	.00	.13	.00	.02	.01	1.3	.8	1.2
19...	.00	.00	.07	.00	.02	.00	5.3	.5	1.7

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
JUNE											
13...	1000	176	6.7	33	8.8	1.5	.6	125	0	15	2.0
13...	1030	10	5.7	32	8.8	1.8	.6	123	0	17	1.9
27...	1230	234	6.9	33	8.5	2.1	.7	123	0	16	1.9
27...	1315	10	5.7	32	8.2	2.3	.7	121	0	16	1.9
JULY											
11...	1045	250	6.2	32	8.4	1.4	.6	120	0	16	1.7
11...	1100	10	5.0	29	7.6	1.3	.6	107	1	16	2.3
25...	1130	260	5.8	30	7.6	1.9	.6	117	0	14	.8
25...	1200	10	4.7	28	6.5	1.8	.6	110	0	13	.8
AUG.											
08...	1045	260	5.8	31	7.3	1.4	.6	117	0	13	1.4
08...	1130	10	4.7	29	6.8	1.4	.6	107	0	13	1.0
08...	1145	1.0	4.7	26	6.5	1.5	.5	111	0	11	1.0
22...	1300	259	5.6	30	7.3	1.2	.5	117	0	12	1.3
22...	1330	10	4.1	28	6.6	.9	.5	108	0	12	1.3
SEP.											
03...	1145	262	5.8	29	7.1	1.6	.5	120	0	12	1.3
03...	1200	10	3.9	26	7.1	1.7	.5	109	0	12	1.1
19...	1130	258	6.3	33	7.7	1.9	.6	121	0	13	3.8
19...	1200	10	4.1	28	7.8	1.8	.6	108	0	13	3.6

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
JUNE											
13...	.4	121	120	16	.1	3.2	5	2.8	30	1	20
13...	.5	117	120	15	.1	.8	5	3.4	30	1	20
27...	.6	113	120	17	.1	4.9	3	.6	30	1	20
27...	.7	123	110	14	.1	.6	5	.6	40	1	20
JULY											
11...	.3	130	110	16	.1	1.9	7	.5	20	2	20
11...	.3	115	100	14	.1	.6	7	.5	30	2	20
25...	.3	124	110	10	.1	3.7	8	.5	0	3	20
25...	.2	111	97	6	.1	.7	5	.7	10	2	20
AUG.											
08...	.2	116	110	12	.1	3.0	20	.4	20	6	80
08...	.2	104	100	13	.1	.5	3	.5	0	2	20
08...	.2	105	92	1	.1	.6	4	--	--	1	--
22...	.3	120	110	9	.1	3.7	7	.3	10	1	30
22...	.2	108	97	9	.0	.7	3	.2	10	0	20
SEP.											
03...	.3	124	100	3	.1	6.1	8	.7	10	1	40
03...	.2	116	94	5	.1	1.7	3	.7	10	1	20
19...	.3	115	110	15	.1	4.9	5	1.3	10	1	20
19...	.2	98	100	13	.1	.9	2	1.0	10	1	10

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MOLYB-DENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE											
13...	4	10	0	20	300	1	190	<100	30	0	60
13...	2	0	0	10	200	1	200	<100	30	0	20
27...	4	20	0	10	500	1	220	<100	2100	2	40
27...	2	0	0	10	400	1	90	<100	0	1	30
JULY											
11...	0	20	0	0	500	3	340	<100	80	0	10
11...	1	0	0	0	400	2	300	<100	0	0	0
25...	0	0	0	0	300	2	530	<100	20	0	0
25...	0	0	0	0	400	2	200	<100	0	0	60
AUG.											
08...	0	0	0	10	200	2	430	<100	0	0	10
08...	0	0	1	20	100	1	50	<100	0	0	0
08...	--	--	--	--	--	1	--	--	--	--	--
22...	2	0	1	20	500	3	390	<100	10	0	20
22...	2	0	1	10	400	1	40	<100	0	0	20
SEP.											
03...	1	0	0	10	600	2	400	<100	40	1	20
03...	0	0	1	0	300	0	80	<100	0	1	150
19...	4	0	1	0	0	1	500	<100	30	1	10
19...	3	0	1	0	300	0	60	<100	0	1	10

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT.--Continued

SELECTED VERTICAL PROFILES

APR. 3

DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS-MISS-IBILITY (PER-CENT)
0	2.6	260	11.9	8.3	--
1	2.6	260	11.9	8.3	48
2	2.6	260	11.9	8.3	47
5	2.6	260	11.9	8.3	47
10	2.6	260	11.9	8.3	48
15	2.6	260	11.9	8.3	48
20	2.6	260	11.9	8.3	48
30	2.6	260	11.9	8.3	47
40	2.6	260	12.0	8.4	47
50	2.6	260	11.9	8.4	47
60	2.6	260	11.8	8.3	47
70	2.6	260	11.8	8.3	47
80	2.6	260	11.8	8.2	47
90	2.6	260	11.8	8.2	47
100	2.6	260	11.8	8.2	47
110	2.6	265	11.8	8.2	45
118	2.6	265	11.7	8.2	44
128	2.6	265	11.7	8.2	44

AUG. 22

DEPTH (FT)	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS-MISS-IBILITY (PER-CENT)
0	18.0	150	8.7	8.4	--
1	18.0	150	8.7	8.4	43
2	18.0	150	8.7	8.4	43
3	17.8	150	8.7	8.4	43
5	17.8	150	8.7	8.4	41
10	17.5	150	8.7	8.4	41
15	17.2	150	8.7	8.4	39
20	17.2	150	8.7	8.3	39
25	16.8	150	8.7	8.3	37
30	16.2	150	8.5	8.2	37
40	14.5	150	8.3	8.1	21
50	13.8	145	8.3	8.1	15
60	13.0	145	8.6	8.1	9
70	12.0	145	8.7	8.1	10
80	12.0	145	8.9	8.1	3
90	11.5	145	9.1	8.2	2
100	11.1	145	9.1	8.2	<1
110	11.0	140	9.1	8.2	<1
120	11.0	140	9.1	8.2	<1
130	10.8	140	9.1	8.2	<1
140	10.6	140	9.2	8.2	<1
155	10.4	140	9.2	8.2	<1
170	10.2	140	9.2	8.1	<1
185	10.0	140	9.2	8.0	<1
200	9.8	140	9.1	8.0	<1
215	9.5	150	9.0	7.9	<1
230	9.2	150	8.8	7.9	<1
245	9.0	155	7.1	7.8	<1
259	8.6	160	6.1	7.7	<1
269	8.6	165	4.7	7.6	<1

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT.	
02...	60
NOV.	
29...	12
APR.	
25...	250
MAY	
23...	32
JUNE	
13...	160
27...	130
JULY	
11...	41
25...	120
AUG.	
08...	43
22...	150
SEPT.	
03...	130
19...	120

(Carbon-14, light and dark bottle method)

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.

LOCATION.--Lat 48°24'43", long 115°18'33", in SW¼NW¼NE¼ sec.33, T.31 N., R.29 W., Lincoln County, in middle of old channel 0.2 mi (0.3 km) upstream from Libby Dam, and 11.6 mi (18.7 km) east of Libby.

PERIOD OF RECORD.--Chemical analyses: June 1972 to September 1974.

REMARKS.--Additional vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	ELEVATION ABOVE MEAN SEA LEVEL (FT)	DEPTH (FT)	TOTAL NITROGEN (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED PHOSPHORUS (P) (MG/L)
OCT.										
01...	1030	2382	235	.27	.00	.14	.13	.14	.14	.04
01...	1100	2382	10	.11	.00	.01	.10	.01	.01	.05
10...	0930	2378	230	.06	.01	.07	.00	.06	.08	.06
10...	1000	2378	10	.14	.00	.01	.13	.01	.01	.05
16...	1200	2375	227	.41	.00	.21	.19	.22	.21	.08
16...	1230	2375	10	.17	.01	.02	.13	.04	.03	.07
24...	0930	2372	226	.42	.01	.22	.16	.26	.23	.03
24...	1000	2372	10	.36	.01	.17	.18	.18	.18	.04
29...	1030	2371	220	.38	.05	.17	.14	.24	.22	.08
29...	1100	2371	10	.16	.01	.07	.08	.08	.08	.08
NOV.										
13...	1000	2365	10	1.8	.00	.05	1.7	.07	.05	.06
13...	1030	2365	230	.27	.00	.16	.06	.21	.16	.08
28...	1000	2364	214	.27	.00	.04	.19	.08	.04	.06
28...	1030	2364	10	.28	.00	.04	.15	.13	.04	.05
DEC.										
05...	0930	2365	213	.29	.02	.06	.21	.08	.08	.07
05...	0945	2365	10	.31	.00	.05	.22	.09	.05	.06
19...	1030	2367	220	.24	.00	.05	.17	.07	.05	.05
19...	1100	2367	10	.26	.01	.03	.23	.03	.04	.07
APR.										
03...	1230	2306	158	.29	.00	.04	.19	.10	.04	.03
03...	1300	2306	10	.36	.00	.10	.25	.11	.10	.04
10...	1100	2306	161	.41	.00	.13	.25	.16	.13	.07
10...	1130	2306	10	.32	.01	.11	.20	.12	.12	.07
17...	1030	2306	159	.25	.00	.13	.11	.14	.13	.04
17...	1100	2306	10	.22	.00	.13	.09	.13	.13	.03
23...	1100	2306	163	.30	.00	.10	.17	.13	.10	.11
23...	1130	2306	10	.34	.00	.08	.24	.10	.08	.11
MAY										
02...	1030	2307	163	.23	.00	.10	.13	.10	.10	.12
02...	1100	2307	10	.19	.00	.03	.16	.03	.03	.07
08...	1030	2311	168	.30	.01	.09	.20	.10	.10	.13
08...	1100	2311	10	.23	.00	.06	.17	.06	.06	.05
16...	1100	2327	177	.27	.00	.08	.19	.08	.08	.10
16...	1130	2327	10	.27	.00	.06	.21	.06	.06	.04
21...	1030	2328	183	.26	.03	.03	.20	.06	.06	.11
21...	1100	2328	10	.30	.01	.07	.19	.11	.08	.05
29...	1100	2339	193	.61	.00	.09	.53	.08	.09	.09
29...	1130	2339	10	.58	.00	.03	.55	.03	.03	.03

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	CHEMICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)
OCT.											
01...	1030	235	.5	8	.04	.09	.05	.3	5.6	2	0
01...	1100	10	.5	8	.01	.09	.03	.4	4.1	4	100
NOV.											
28...	1000	214	.6	4	.17	.02	.05	.6	4.9	0	0
28...	1030	10	.8	3	.14	.01	.04	.4	4.5	2	0
APR.											
23...	1100	163	1.5	7	.13	.04	.04	1.2	4.5	3	500
23...	1130	10	2.8	9	.22	.02	.00	1.0	4.0	2	200
MAY											
21...	1030	183	.8	7	.12	.08	.08	1.3	6.2	4	0
21...	1100	10	1.6	8	.13	.06	.02	1.2	5.9	1	0

DATE	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	CYANIDE (CN) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.										
01...	0	0	0	.01	30	3	0	.0	1	20
01...	0	0	0	.01	10	3	0	.0	1	10
NOV.										
28...	0	0	1	.00	10	1	10	.0	0	0
28...	0	0	1	.01	30	1	0	.0	1	0
APR.										
23...	0	0	7	.00	120	0	640	.0	2	30
23...	0	0	11	.00	50	0	3300	.0	4	20
MAY										
21...	0	0	7	.00	10	0	490	.0	2	0
21...	0	0	3	.00	20	0	60	.0	2	0

DATE	TIME	DEPTH (FT)	TOTAL NITROGEN IN BOTTOM DEPOSITS (N) (MG/KG)	TOTAL KJFL. NITROGEN IN BOTTOM DEP. (MG/KG)	TOTAL PHOSPHORUS IN BOTTOM DEPOSITS (MG/KG)	TOTAL ARSENIC IN BOTTOM DEPOSITS (UG/G)	TOTAL BORON IN BOTTOM DEPOSITS (UG/G)
OCT.							
01...	1300	245	73	--	222	5	6
MAY							
21...	1200	193	--	1700	290	4	8

DATE	TOTAL CADMIUM IN BOTTOM DEPOSITS (UG/G)	TOTAL CHROMIUM IN BOTTOM DEPOSITS (UG/G)	TOTAL IRON IN BOTTOM DEPOSITS (UG/G)	TOTAL LEAD IN BOTTOM DEPOSITS (UG/G)	TOTAL MANGANESE IN BOTTOM DEPOSITS (UG/G)	TOTAL MERCURY IN BOTTOM DEPOSITS (UG/G)	TOTAL ZINC IN BOTTOM DEPOSITS (UG/G)
OCT.							
01...	0	9	15000	20	530	.0	78
MAY							
21...	<10	5	11000	20	1000	.0	94

DATE	TIME	DEPTH (FT)	ALDRIN (UG/L)	LINDANE (UG/L)	CHLORDANE (UG/L)	DDD (UG/L)	DDE (UG/L)	DDT (UG/L)
OCT.								
01...	1030	235	.00	.00	.0	.00	.00	.00
01...	1100	10	.00	.00	.0	.00	.00	.00
MAY								
21...	1030	183	.00	.00	.0	.00	.00	.00
21...	1100	10	.00	.00	.0	.00	.00	.00

DATE	DIELDRIN (UG/L)	ENDRIN (UG/L)	HEPTACHLOR (UG/L)	HEPTACHLOR EPOXIDE (UG/L)	PCB (UG/L)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
OCT.								
01...	.00	.00	.00	.00	.0	.00	.00	.00
01...	.00	.00	.00	.00	.0	.00	.00	.00
MAY								
21...	.00	.00	.00	.00	.0	.00	.00	.00
21...	.00	.00	.00	.00	.0	.00	.00	.00

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ALDRIN IN BOTTOM DEPOSITS (UG/KG)	LINDANE IN BOTTOM DEPOSITS (UG/KG)	CHLORDANE IN BOTTOM DEPOSITS (UG/KG)	DDD IN BOTTOM DEPOSITS (UG/KG)	DDE IN BOTTOM DEPOSITS (UG/KG)
OCT.							
01...	1300	245	.0	.0	0	.0	.0
MAY							
21...	1200	193	.0	.0	0	.0	.0

DATE	DDT IN BOTTOM DEPOSITS (UG/KG)	DIELDRIN IN BOTTOM DEPOSITS (UG/KG)	ENDRIN IN BOTTOM DEPOSITS (UG/KG)	HEPTACHLOR IN BOTTOM DEPOSITS (UG/KG)	HEPTACHLOR EPOXIDE IN BOTTOM DEPOSITS (UG/KG)	PCB IN BOTTOM DEPOSITS (UG/KG)
OCT.						
01...	.0	.0	.0	.0	.0	0
MAY						
21...	.0	.0	.0	.0	.0	0

DATE	TIME	DEPTH (FT)	DISSOLVED URANIUM (U) (UG/L)	DISSOLVED RA-226 (RADON METHOD) (PC/L)	DISSOLVED GROSS ALPHA AS U-NAT. (UG/L)	DISSOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DISSOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILTRABLE RESIDUE (MG/L)	SUSPENDED GROSS ALPHA AS U-NAT. (UG/L)	SUSPENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUSPENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NONFILTRABLE RESIDUE (MG/L)
OCT.												
01...	1030	235	.52	.05	2.1	1.3	1.7	130	<.4	<.4	<.4	2
01...	1100	10	.52	.03	2.2	1.3	1.6	120	<.4	<.4	<.4	1
MAY												
21...	1030	183	.83	.04	4.1	2.8	3.5	190	<.4	<.4	<.4	2
21...	1100	10	.63	.06	2.8	1.8	2.2	150	<.4	.6	.6	3

DATE	TIME	DEPTH (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
OCT.							
01...	1030	235	9.1	205	7.0	90	--
01...	1100	10	15.8	210	7.9	88	--
10...	0930	230	9.4	210	7.1	105	--
10...	1000	10	14.5	215	7.8	92	--
16...	1200	227	9.1	210	7.2	96	60
16...	1230	10	14.0	225	7.8	99	27
24...	0930	226	8.8	220	7.0	98	--
24...	1000	10	13.4	230	7.8	98	--
29...	1030	220	9.1	210	7.0	102	--
29...	1100	10	12.8	230	7.8	100	--
NOV.							
13...	1000	10	10.8	225	7.9	101	--
13...	1030	230	7.8	245	7.4	108	--
28...	1000	214	7.2	240	7.8	105	20
28...	1030	10	9.0	235	7.9	100	3
DEC.							
05...	0930	213	7.5	245	7.8	105	--
05...	0945	10	8.6	235	7.9	101	--
19...	1030	220	6.2	230	7.9	104	--
19...	1100	10	7.0	235	8.0	98	--
FEB.							
15...	1215	25	2.6	210	8.2	--	--
APR.							
03...	1230	158	2.4	230	8.0	109	--
03...	1300	10	2.7	230	8.2	108	--
10...	1100	161	2.2	250	8.1	113	--
10...	1130	10	2.2	245	8.3	110	--
17...	1030	159	3.0	255	8.4	117	--
17...	1100	10	3.4	240	8.3	110	--
23...	1100	163	3.1	240	7.9	119	1
23...	1130	10	3.7	230	8.2	111	0
MAY							
02...	1030	163	4.5	235	8.0	117	--
02...	1100	10	7.0	240	8.4	110	--
08...	1030	168	4.8	240	8.1	120	--
08...	1100	10	8.5	240	8.4	112	--
16...	1100	177	5.0	250	8.1	120	--
16...	1130	10	8.3	205	8.3	103	--
21...	1030	183	5.2	250	7.9	105	0
21...	1100	10	11.0	220	8.4	121	0
29...	1100	193	5.3	245	8.0	117	
29...	1130	10	11.6	215	8.4	103	

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	ELEVATION ABOVE MEAN SEA LEVEL (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)
JUNE										
14...	1015	229	2376	6.0	235	8.1	7.7	115	.18	.06
14...	1045	10	2376	10.7	200	10.6	8.4	98	.23	.07
14...	1100	5.0	2376	11.0	200	11.6	8.6	98	.05	.04
14...	1115	.6	2376	12.9	200	11.5	8.7	98	.03	.04
28...	1100	282	2436	6.4	220	6.3	7.5	108	.00	.08
28...	1130	10	2436	14.8	205	9.5	8.4	95	.33	.02
28...	1200	23	2436	12.2	200	9.7	8.3	95	.01	.08
28...	1230	.9	2436	16.8	200	9.4	8.5	95	.13	.02
JULY										
12...	1045	300	2449	7.9	195	7.9	7.8	99	.07	.12
12...	1100	10	2449	13.7	170	8.9	8.2	86	.16	.07
12...	1115	3.9	2449	14.0	175	9.0	8.2	87	.12	.06
12...	1130	.3	2449	14.0	175	9.0	8.2	87	.03	.07
26...	1030	300	2459	7.8	195	7.6	7.6	101	.01	.08
26...	1045	10	2459	13.0	165	8.6	8.1	85	.00	.08
26...	1115	13	2459	12.8	165	8.6	8.1	85	.10	.06
26...	1130	1.0	2459	16.0	170	8.8	8.2	85	.08	.05
AUG.										
09...	1015	300	2459	7.8	190	6.2	7.8	85	.17	.06
09...	1045	30	2459	15.2	165	7.6	8.0	85	.10	.12
09...	1100	10	2459	17.6	170	8.5	8.4	85	.16	.04
09...	1115	1.0	2459	17.6	175	8.5	8.4	88	.15	.04
23...	1000	10	2459	18.0	150	8.6	8.4	86	.01	.05
23...	1100	300	2459	8.0	175	5.9	7.7	98	.01	.05
23...	1130	31	2459	16.2	150	8.7	8.2	86	.02	.06
23...	1200	2.5	2459	18.0	150	8.5	8.4	86	.00	.04
SEP.										
06...	1130	300	2458	8.0	190	5.3	7.9	87	.25	.04
06...	1145	10	2458	18.0	165	8.5	8.4	86	.27	.05
06...	1200	35	2458	16.2	165	8.1	8.2	85	.02	.10
06...	1215	1.0	2458	18.2	165	8.4	8.4	85	.12	.05
20...	1115	290	2458	7.8	195	5.1	7.7	102	.03	.16
20...	1145	10	2458	16.4	175	8.5	8.3	86	.09	.04
20...	1245	35	2458	16.2	175	8.5	8.3	87	.09	.02
20...	1300	1.2	2458	16.6	175	8.5	8.3	87	.04	.07

DATE	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)
JUNE									
14...	.01	.12	.24	.13	.10	.05	1.8	--	--
14...	.01	.02	.30	.03	.05	.03	1.9	4.7	1.9
14...	.01	.01	.09	.02	.04	.02	2.5	1.3	2.4
14...	.03	.00	.07	.01	.04	.02	2.5	.2	4.5
28...	.00	.18	.08	.18	--	.05	1.7	--	--
28...	.00	.01	.35	.01	.06	.02	2.1	.3	.3
28...	.00	.01	.09	.01	--	.02	2.7	.8	.6
28...	.00	.01	.15	.01	--	.01	3.4	1.0	.4
JULY									
12...	.00	.15	.19	.15	.07	.04	2.7	--	--
12...	.00	.00	.23	.00	.04	.00	2.4	.4	.7
12...	.00	.00	.18	.00	.03	.00	2.6	.5	.2
12...	.00	.01	.10	.01	.04	.01	2.5	.0	.0
26...	.00	.14	.09	.14	.09	.00	3.5	--	--
26...	.00	.01	.08	.01	.04	.01	2.2	--	--
26...	.00	.02	.16	.02	.04	.01	2.4	.8	.2
26...	.00	.01	.04	.01	.02	.01	2.5	1.8	1.4
AUG.									
09...	.00	.04	.23	.04	.06	.01	2.4	--	--
09...	.00	.00	.22	.00	.02	.00	3.1	.0	.0
09...	.00	.00	.20	.00	.01	.00	2.0	.0	.0
09...	.00	.00	.19	.00	.01	.00	3.0	.4	.0
23...	.00	.01	.06	.01	.01	.00	2.7	.0	.0
23...	.00	.19	.06	.19	.07	.03	2.9	--	--
23...	.00	.01	.08	.01	.02	.00	4.1	.7	.2
23...	.01	.00	.04	.01	.01	.00	3.7	.2	.3
SEP.									
06...	.00	.09	.29	.09	.08	.00	8.8	.2	.3
06...	.00	.13	.32	.13	.09	.03	6.2	.8	.5
06...	.00	.00	.12	.00	.02	.00	4.4	.8	.5
06...	.00	.00	.17	.00	.02	.00	4.4	--	--
20...	.00	.20	.19	.20	.08	.05	2.0	--	--
20...	.00	.01	.13	.01	.01	.01	2.4	1.2	1.4
20...	.01	.00	.11	.01	.01	.01	3.5	1.2	.9
20...	.00	.03	.11	.03	.04	.01	1.3	.6	.5

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	DEPTH (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
JUNE											
14...	1015	229	6.5	41	12	3.9	1.0	143	0	27	3.3
14...	1045	10	6.3	34	8.9	2.3	.7	125	0	17	1.7
28...	1100	282	7.0	37	10	3.4	.8	137	0	23	3.0
28...	1130	10	5.8	32	8.4	2.2	.6	116	0	17	1.8
JULY											
12...	1045	300	6.7	34	9.1	1.5	.7	124	0	18	1.7
12...	1100	10	5.0	28	7.6	1.2	.7	109	0	13	1.3
26...	1030	300	6.7	32	8.4	2.0	.6	127	0	17	.8
26...	1045	10	4.9	27	6.5	1.6	.6	107	0	12	.5
AUG.											
09...	1015	300	4.9	28	6.0	1.5	.6	105	0	11	2.4
09...	1100	10	4.6	28	6.6	1.7	.6	109	0	14	1.5
23...	1000	10	4.2	27	6.6	1.1	.5	106	1	12	1.4
23...	1100	300	6.4	33	8.6	1.5	.6	127	0	15	1.8
SEP.											
06...	1130	300	5.4	28	6.9	1.3	.6	109	0	12	1.5
06...	1145	10	4.0	26	7.1	1.4	.6	106	1	11	.9
20...	1115	290	7.1	34	8.0	2.1	.4	129	0	14	1.7
20...	1145	10	4.0	27	6.4	1.9	.6	108	0	11	1.3

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)
JUNE											
14...	1.0	169	150	35	.1	4.6	2	.5	10	1	20
14...	.4	134	120	19	.1	.8	2	1.7	20	1	30
28...	.8	159	130	21	.1	6.9	7	.7	10	1	80
28...	.4	136	110	19	.1	.7	5	1.1	40	1	50
JULY											
12...	.4	133	120	21	.1	3.1	5	.4	30	3	20
12...	.2	108	100	12	.1	1.1	10	.7	30	2	20
26...	.4	138	110	10	.1	5.1	7	.2	0	3	20
26...	.2	110	94	6	.1	1.4	10	1.2	0	1	20
AUG.											
09...	.2	107	95	9	.1	2.7	20	.4	0	1	40
09...	.2	107	97	8	.1	.7	4	.6	0	1	20
23...	.2	108	95	6	.1	.7	3	.8	0	0	20
23...	.4	133	120	14	.1	4.1	5	.5	10	1	50
SEP.											
06...	.2	106	98	9	.1	2.2	10	.3	30	0	40
06...	.3	104	94	6	.1	.7	2	.4	10	0	20
20...	.4	125	120	12	.1	4.1	5	.6	10	1	50
20...	.2	101	94	5	.1	.9	2	.4	20	0	20

DATE	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MOLYB-DENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE											
14...	0	0	2	10	0	1	370	<100	10	0	20
14...	0	0	1	20	0	1	170	<100	0	0	20
28...	0	0	0	10	200	1	140	<100	200	0	20
28...	2	0	0	10	400	2	100	<100	10	0	20
JULY											
12...	1	0	0	10	400	2	270	<100	0	0	0
12...	1	0	0	10	500	2	450	<100	10	0	10
26...	1	0	0	0	300	2	240	<100	10	0	70
26...	1	0	0	0	400	0	290	<100	0	0	0
AUG.											
09...	0	0	0	20	400	1	620	<100	0	0	30
09...	0	0	0	20	100	0	40	<100	0	0	20
23...	1	0	1	10	200	1	80	<100	0	0	10
23...	2	0	0	10	500	2	210	<100	0	0	0
SEP.											
06...	0	0	1	0	800	1	480	<100	0	1	200
06...	2	0	0	0	100	0	50	<100	0	0	40
20...	3	0	0	10	300	0	220	<100	10	0	10
20...	2	0	0	10	300	2	50	<100	0	0	10

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT.--Continued

SELECTED VERTICAL PROFILES

APR. 17

DEPTH (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	TRANSMISSIBILITY (PERCENT)
0	3.4	240	12.1	8.3	--
1	3.4	240	12.1	8.3	21
2	3.4	240	12.1	8.3	21
5	3.4	240	12.1	8.3	21
10	3.4	240	12.1	8.3	21
15	3.4	240	12.2	8.3	21
20	3.4	240	12.2	8.3	23
30	3.3	240	12.2	8.3	23
40	3.3	240	12.2	8.3	23
50	3.2	250	12.2	8.3	23
60	3.1	250	12.1	8.3	23
70	3.0	250	12.0	8.3	23
80	3.0	250	12.0	8.3	23
90	3.0	250	12.0	8.4	21
100	3.0	250	12.0	8.4	21
110	3.0	250	11.9	8.4	20
120	3.0	250	11.9	8.4	19
130	3.0	250	11.9	8.4	18
140	3.0	250	11.9	8.4	18
150	3.0	250	11.9	8.4	18
159	3.0	255	11.8	8.4	18
169	3.0	255	11.7	8.4	18

AUG. 23

DEPTH (FT)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PH (UNITS)	TRANSMISSIBILITY (PERCENT)
0	18.0	150	8.5	8.4	--
1	18.0	150	8.5	8.4	41
2	18.0	150	8.5	8.4	41
5	18.0	150	8.5	8.4	41
10	18.0	150	8.6	8.4	41
15	17.6	150	8.6	8.4	41
20	17.0	150	8.6	8.3	41
25	16.7	150	8.6	8.3	41
31	16.2	150	8.7	8.2	37
35	15.9	145	8.3	8.2	33
40	15.6	145	8.2	8.1	32
45	15.0	150	8.0	8.1	28
50	14.6	150	8.0	8.0	24
55	13.3	145	7.9	7.9	16
60	12.6	140	8.4	8.0	11
70	12.3	140	8.7	8.1	4
80	11.7	140	8.8	8.1	2
90	11.4	140	9.1	8.1	<1
100	11.3	140	9.3	8.2	<1
110	11.1	140	9.3	8.2	<1
120	11.0	140	9.2	8.2	<1
130	10.9	140	9.2	8.1	<1
140	10.8	140	9.2	8.1	<1
150	10.6	140	9.2	8.1	<1
165	10.3	140	9.2	8.1	<1
180	10.1	140	9.5	8.1	<1
195	10.0	140	9.5	8.1	<1
210	9.8	140	9.5	8.1	<1
225	9.3	150	9.3	8.0	<1
240	9.0	150	9.0	7.9	<1
255	8.8	155	8.6	7.9	<1
270	8.3	160	7.8	7.8	2
285	8.1	165	6.8	7.8	5
300	8.0	175	5.9	7.7	5
324	--	--	--	--	--

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M^2/DAY)
OCT.	
01...	70
NOV.	
28...	4
APR.	
23...	340
MAY.	
21...	120
JUNE	
14...	310
28...	170
JULY	
12...	12
26...	110
AUG.	
09...	140
23...	63
SEPT.	
06...	98
20...	110

(Carbon-14, light and dark bottle method)

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.

LOCATION (revised).--Lat 48°24'03", long 115°19'11", in SW¼SW¼SW¼ sec.33, T.31 N., R.22 W., Lincoln County, Kootenai National Forest, at gaging station 0.7 mi (1.1 km) downstream from Libby Dam, 2.8 mi (4.5 km) upstream from Fisher River, 11 mi (18 km) east of Libby, and at mile 221.0 (355.6 km). "Prior to March 25, 1974, at site, 3.2 mi (5.1 km) downstream."

DRAINAGE AREA.--8,985 mi² (23,271 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: June to September 1967 (monthly), October 1967 to September 1969 (daily), October 1969 to September 1974 (monthly).
Water temperatures: October 1967 to September 1974.
Sediment records: October 1967 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 17.0°C Aug. 31, Sept. 1-3; minimum, 2.0°C on several days during March.
Sediment concentrations: Maximum daily, 28 mg/l July 1; minimum daily, 1 mg/l on many days during December to February, April and August.
Sediment discharge: Maximum daily, 2,730 tons (2,480 tonnes) July 1; minimum daily, 7.1 tons (6.4 tonnes) Dec. 26, 27.

Period of record:
Water temperatures: Maximum, 21.5°C Aug. 6, 1970; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 1,200 mg/l June 5, 1968; minimum daily, 1 mg/l on many days in 1968, 1969, 1972-74.
Sediment discharge: Maximum daily, 200,000 tons (181,000 tonnes) June 5, 1968; minimum daily, 5.4 tons (4.9 tonnes) Jan. 28, 1972.

REMARKS.--Miscellaneous samples of chemical data published for June to September 1967. Temperature recorder removed Nov. 12 to May 19. Thermograph records furnished by Corps of Engineers, U.S. Army. Flow regulated by Lake Koocanusa since Mar. 21, 1972.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.											
04...	1700	10700	4.6	32	8.1	1.8	.6	106	--	16	2.2
12...	1030	10600	4.6	33	8.3	1.9	.1	115	0	17	1.9
19...	1030	10500	5.2	33	8.5	2.1	.6	122	0	18	1.8
26...	1130	7720	4.8	35	9.4	2.6	.6	126	0	19	2.7
NOV.											
02...	1030	8250	4.6	35	9.6	2.5	.7	126	0	21	2.2
05...	1000	10500	4.5	35	9.4	2.5	.7	129	0	20	2.7
15...	1100	5730	4.8	35	10	2.8	.7	128	0	22	2.4
20...	1100	5100	4.6	36	9.4	3.1	.8	128	0	20	2.1
30...	1700	2720	4.8	37	10	3.3	.8	128	0	23	2.4
DEC.											
07...	1430	2660	4.8	37	10	2.9	.7	133	0	31	3.0
12...	0800	2400	5.1	37	9.9	3.2	.7	133	0	23	3.0
18...	1130	2780	5.0	36	9.9	3.1	.7	131	0	22	2.2
27...	1015	2630	4.7	37	9.7	2.6	.8	129	0	23	2.9
JAN.											
03...	1400	2660	4.7	38	9.9	2.7	.7	129	0	21	2.5
10...	1430	15000	5.6	37	10	3.0	.6	128	0	21	2.1
19...	1330	3090	5.4	37	9.9	3.4	.8	127	--	22	2.3
25...	1000	2820	4.8	35	9.8	2.9	.7	128	--	21	2.3
31...	1030	17800	4.9	36	9.7	3.2	.7	129	--	20	2.5
FEB.											
07...	1515	17600	4.8	35	9.6	3.0	.8	124	0	21	2.4
13...	1500	14900	4.7	35	9.5	2.7	.6	128	--	21	2.5
22...	1130	19000	5.1	35	9.4	2.9	.7	127	--	21	2.6
27...	0800	17500	4.8	36	9.9	3.0	.7	134	--	22	2.5
MAR.											
07...	0930	14500	5.2	36	10	3.4	.8	134	--	23	2.6
15...	0800	14400	5.0	37	10	3.0	.8	124	--	24	2.9
22...	1500	3620	5.2	39	10	3.3	.8	139	--	24	2.7
28...	1500	4260	4.5	38	11	3.1	.8	135	--	24	2.6
APR.											
04...	1130	6960	5.1	37	11	3.0	.9	133	--	26	3.1
11...	0800	7040	5.4	41	11	3.5	.7	143	--	26	2.4
18...	0800	11900	5.9	40	12	3.9	.9	145	--	29	3.2
22...	1500	12100	6.2	41	12	3.6	1.0	144	--	31	3.1
MAY											
03...	1430	24400	5.3	40	12	3.9	1.0	144	--	31	3.6
10...	0745	10500	6.0	40	11	3.8	.8	141	--	29	3.2
17...	1310	15000	6.5	36	10	2.7	.8	132	--	23	3.0
20...	1430	15700	5.8	36	10	3.3	.8	134	--	25	2.4
30...	1400	16300	5.4	34	9.5	2.5	.7	127	--	22	1.8
JUNE											
10...	1300	5800	6.6	33	8.9	1.8	.7	124	0	17	1.7
24...	1100	16300	6.2	32	8.2	1.8	.6	119	0	18	1.7
JULY											
08...	1000	12700	5.7	29	7.8	1.7	.4	116	0	13	1.6
22...	1100	11200	5.5	30	8.0	1.6	.7	113	0	14	1.5
AUG.											
05...	1030	30100	4.8	28	6.7	1.2	.6	--	0	12	1.5
19...	1030	11200	4.6	28	7.3	1.4	.5	106	0	11	1.1
30...	1015	9250	4.0	28	7.3	1.5	.5	107	0	11	1.6
SEP.											
16...	1015	2110	4.2	29	6.8	1.5	.7	108	0	12	1.5
26...	0930	20700	4.5	29	7.0	1.4	.8	107	0	12	1.1

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	TOTAL RESI-DUE (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	CARBON DIOXIDE (CO2) (MG/L)
OCT.											
04...	.5	18	125	.17	3230	110	26	.1	120	3	6.8
12...	.5	10	120	.16	3160	120	22	.1	158	3	9.2
19...	.4	9	142	.19	3870	120	17	.1	143	2	6.2
26...	.4	30	151	.21	3030	130	23	.1	154	4	4.0
NOV.											
02...	.6	7	155	.21	3060	130	24	.1	158	6	2.5
05...	.6	10	153	.21	3020	130	20	.1	153	4	2.6
15...	.6	20	151	.21	2040	130	24	.1	163	6	2.6
20...	.5	9	146	.20	1590	130	24	.1	158	2	5.1
30...	.5	0	151	.21	881	130	29	.1	171	3	2.6
DEC.											
07...	.5	7	153	.21	892	130	25	.1	--	3	4.2
12...	.5	10	155	.21	917	130	24	.1	160	3	3.4
18...	.5	8	155	.21	900	130	23	.1	160	2	1.7
27...	.5	6	153	.21	905	130	27	.1	150	2	2.1
JAN.											
03...	.6	4	142	.19	840	140	30	.1	168	2	2.1
10...	.6	0	148	.20	5870	130	29	.1	149	2	1.3
19...	.6	5	136	.19	856	130	29	.1	152	2	1.0
25...	.5	9	148	.20	935	130	23	.1	148	5	1.0
31...	.4	5	155	.21	7370	130	24	.1	155	5	1.0
FEB.											
07...	.5	10	145	.20	7200	130	25	.1	146	5	1.3
13...	.5	10	143	.19	7100	130	22	.1	157	8	1.3
22...	.6	30	151	.21	7500	130	22	.1	156	7	1.0
27...	.7	20	153	.21	7060	130	21	.1	153	3	1.4
MAR.											
07...	.6	10	158	.21	5720	130	21	.1	157	3	2.1
15...	.7	10	147	.20	5000	130	32	.1	159	3	1.6
22...	.7	10	150	.20	1270	140	25	.1	155	3	2.2
28...	.8	10	157	.21	1560	140	30	.1	157	2	1.7
APR.											
04...	.7	7	165	.22	3100	140	29	.1	170	2	.8
11...	.9	10	157	.21	2980	150	31	.1	163	3	1.1
18...	.9	20	161	.22	5170	150	31	.1	173	3	.9
22...	1.1	30	170	.23	5550	150	34	.1	189	3	1.5
MAY											
03...	1.1	10	169	.23	11100	150	31	.1	177	8	.9
10...	1.2	20	167	.23	4730	150	30	.1	174	8	1.4
17...	.8	7	152	.21	6480	130	23	.1	163	20	.8
20...	.9	9	143	.19	6060	130	21	.1	147	8	.9
30...	1.2	10	139	.19	6120	120	20	.1	147	6	1.0
JUNE											
10...	.5	--	142	.19	2220	120	17	.1	--	5	1.3
24...	.3	--	119	.16	5240	110	16	.1	--	6	1.9
JULY											
08...	.3	--	112	.15	3840	100	9	.1	--	8	1.5
22...	.2	--	112	.15	3390	110	15	.1	--	80	.9
AUG.											
05...	.2	--	109	.15	8860	98	0	.1	--	4	--
19...	.2	--	100	.14	3020	100	13	.1	--	7	.9
30...	.2	--	99	.13	2470	100	12	.1	--	1	.9
SEP.											
16...	.3	--	111	.15	632	100	12	.1	--	2	.9
26...	.1	--	104	.14	5810	100	13	.1	--	0	.9

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)	DISSOLVED BERYLLIUM (BE) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	HEXAVALENT CHROMIUM (CR6) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.											
04...	1700	10700	10	4	0	0	0	0	0	0	0
12...	1030	10600	10	4	100	0	0	0	0	0	1
19...	1030	10500	10	0	0	0	0	0	0	0	4
26...	1130	7720	0	0	0	0	0	0	0	0	0
NOV.											
02...	1030	8250	20	2	0	0	0	0	0	0	1
05...	1000	10500	20	1	0	0	0	0	0	0	0
15...	1100	5730	10	0	0	0	0	0	0	0	1
20...	1100	5100	--	1	0	0	0	0	0	0	2
30...	1700	2720	20	0	0	0	0	0	0	0	2
DEC.											
07...	1430	2660	10	1	0	0	0	0	0	0	0
12...	0800	2480	10	0	0	0	0	0	0	0	0
18...	1130	2780	20	0	0	0	0	0	0	1	0
27...	1015	2630	10	2	0	0	0	0	0	0	0
JAN.											
03...	1400	2660	10	3	0	0	0	0	0	0	4
10...	1430	15000	10	2	0	0	0	0	0	0	0
19...	1330	3090	10	3	0	0	0	0	0	0	5
25...	1000	2820	10	3	0	0	0	0	0	0	7
31...	1030	17800	10	1	0	0	0	0	0	0	4
FEB.											
07...	1515	17600	30	0	0	0	0	0	0	1	1
13...	1500	14900	20	0	0	0	1	0	0	0	1
22...	1130	19000	10	9	0	0	1	0	0	0	4
27...	0800	17500	20	2	0	0	0	0	0	0	2
MAR.											
07...	0930	14500	10	2	0	0	0	0	0	0	3
15...	0800	14400	10	10	0	0	0	0	0	1	2
22...	1500	3620	10	5	0	0	0	0	0	0	1
28...	1500	4260	20	4	0	0	1	0	0	0	2
APR.											
04...	1130	6960	0	1	0	0	0	0	0	0	3
11...	0800	7040	0	4	0	0	0	0	0	0	2
18...	0800	11900	20	1	0	0	0	0	0	0	1
22...	1500	12100	20	3	0	0	0	0	0	0	2
MAY											
03...	1430	24400	20	2	0	0	1	0	0	0	1
10...	0745	10500	20	12	100	0	0	20	0	0	2
17...	1310	15800	20	3	0	0	0	10	0	0	2
20...	1430	15700	10	0	0	0	0	50	0	0	0
30...	1400	16300	50	1	0	0	0	0	0	0	1
JUNE											
10...	1300	5800	50	0	--	--	--	--	--	--	--
24...	1100	16300	20	2	--	--	--	--	--	--	--
JULY											
08...	1000	12700	30	3	--	--	--	--	--	--	--
22...	1100	11200	0	3	--	--	--	--	--	--	--
AUG.											
05...	1030	30100	0	0	--	--	--	--	--	--	--
19...	1030	11200	10	0	--	--	--	--	--	--	--
30...	1015	9250	30	0	--	--	--	--	--	--	--
SEP.											
16...	1015	2110	10	0	--	--	--	--	--	--	--
26...	0930	20700	10	1	--	--	--	--	--	--	--

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED VANA-DIUM (V) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.											
04...	60	5	0	20	.0	0	1	0	120	.0	20
12...	20	0	0	0	.0	0	1	0	120	.0	20
19...	20	6	0	0	.0	0	0	0	120	.0	20
26...	0	4	0	0	.0	2	0	0	110	.0	10
NOV.											
02...	10	1	0	0	.0	1	0	0	110	.0	30
05...	10	0	0	0	.1	0	2	0	110	.4	30
15...	10	2	0	0	.0	0	0	0	140	.1	30
20...	40	1	0	30	.0	0	0	0	140	.3	20
30...	60	3	0	0	.0	1	2	0	170	.0	20
DEC.											
07...	30	3	0	0	.0	1	2	0	170	.0	20
12...	10	2	0	0	.0	1	2	0	150	.2	20
18...	10	2	0	0	.0	1	2	1	140	.0	0
27...	10	0	0	0	.0	0	0	0	150	.0	20
JAN.											
03...	10	1	0	10	.0	0	1	0	130	.0	10
10...	30	0	0	0	.0	0	0	0	140	.0	20
19...	10	4	0	0	.0	0	1	0	150	.1	10
25...	40	6	0	0	.0	1	4	0	120	.0	10
31...	20	4	0	0	.0	1	2	0	150	.0	10
FEB.											
07...	10	4	0	20	.0	0	3	0	120	.0	20
13...	30	4	0	0	.0	1	2	0	120	.1	10
22...	20	4	0	0	.0	0	0	1	120	.0	10
27...	30	3	0	0	.0	1	0	1	120	.0	10
MAR.											
07...	20	3	0	0	.0	0	2	0	140	.0	20
15...	40	2	0	10	.0	1	3	0	140	.0	20
22...	40	1	0	10	.0	1	2	0	150	.0	0
28...	20	4	0	10	.0	0	0	0	130	.1	20
APR.											
04...	20	0	0	20	.0	0	2	0	130	.0	20
11...	30	2	10	30	.1	0	0	0	100	.0	20
18...	40	2	0	40	.0	1	0	1	100	.0	10
22...	20	1	10	50	.0	0	3	0	130	.0	0
MAY											
03...	80	2	10	0	.0	1	0	0	100	.0	50
10...	50	0	0	10	.0	1	0	0	170	.2	10
17...	80	0	0	20	.0	0	0	0	100	.1	20
20...	20	0	0	0	.0	0	0	0	30	.2	10
30...	70	1	0	0	.0	0	1	0	90	.1	10
JUNE											
10...	30	2	--	0	--	2	--	--	--	--	20
24...	30	6	--	0	--	0	--	--	--	--	10
JULY											
08...	10	3	--	20	--	0	--	--	--	--	0
22...	20	1	--	40	--	0	--	--	--	--	10
AUG.											
05...	10	0	--	0	--	0	--	--	--	--	0
19...	20	1	--	0	--	0	--	--	--	--	10
30...	20	0	--	0	--	0	--	--	--	--	10
SEP.											
16...	20	1	--	0	--	0	--	--	--	--	10
26...	20	2	--	0	--	--	--	--	--	--	0

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TOTAL NITRO- GEN (N) (MG/L)	ORGANIC NITRO- GEN (N) (MG/L)	AMMONIA NITRO- GEN (N) (MG/L)	DIS- SOLVED NITRITE (N) (MG/L)	DIS- SOLVED NITRATE (N) (MG/L)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS- SOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)
OCT.											
04...	1700	10700	.16	.05	.02	.01	.08	.07	.09	.09	.15
12...	1030	10600	.16	.12	.01	.00	.03	.13	.03	.03	.08
19...	1030	10500	.45	.31	.01	.03	.05	.32	.13	.08	.20
26...	1130	7720	.28	.15	.01	.01	.09	.16	.12	.10	.12
NOV.											
02...	1030	8250	.20	.06	.01	.00	.12	.07	.13	.12	.05
05...	1000	10500	.26	.14	.02	.01	.06	.16	.10	.07	.07
15...	1100	5730	.21	.11	.01	.00	.07	.12	.09	.07	.08
20...	1100	5100	.31	.23	.01	.01	.06	.24	.07	.07	.24
30...	1700	2720	.19	.10	.01	.06	.02	.11	.08	.08	.06
DEC.											
07...	1430	2660	.31	.20	.01	.06	.02	.21	.10	.08	.06
12...	0800	2480	.42	.31	.01	.03	.05	.32	.10	.08	.07
18...	1130	2780	.31	.19	.04	.00	.08	.23	.08	.08	.08
27...	1015	2630	.27	.18	.01	.00	.08	.19	.08	.08	.23
JAN.											
03...	1400	2660	.30	.24	.01	.00	.03	.25	.05	.03	.05
10...	1430	15000	.41	.27	.01	.00	.10	.28	.13	.10	.06
19...	1330	3090	.23	.05	.09	.02	.06	.14	.09	.08	.09
25...	1000	2820	.21	.03	.07	.03	.05	.10	.11	.08	.08
31...	1030	17800	.22	.12	.04	.01	.04	.16	.08	.05	.07
FEB.											
07...	1515	17600	.39	.18	.04	.01	.06	.22	.17	.07	.06
13...	1500	16900	.20	.06	.06	.02	.06	.12	.08	.08	.06
22...	1130	19000	.17	.01	.09	.01	.00	.10	.07	.01	.06
27...	0800	17500	.35	.16	.06	.01	.05	.22	.13	.06	.05
MAR.											
07...	0930	14500	.36	.23	.01	.00	.11	.24	.12	.11	.06
15...	0800	14400	.20	.02	.09	.02	.06	.11	.09	.08	.07
22...	1500	3620	.33	.09	.08	.00	.15	.17	.18	.15	.06
28...	1500	4260	.24	.11	.05	.00	.05	.16	.08	.05	.09
APR.											
04...	1130	6900	.27	.06	.09	.00	.12	.15	.12	.12	.04
11...	0800	7040	.33	.10	.02	.03	.09	.20	.13	.12	.08
18...	0800	11900	.37	.14	.10	.00	.07	.24	.13	.07	.08
22...	1500	12100	.40	.16	.06	.02	.11	.22	.10	.13	.10
MAY											
03...	1430	24400	.28	.16	.07	.00	.05	.23	.08	.05	.11
10...	0745	10500	.26	.09	.09	.00	.05	.18	.06	.05	.11
17...	1310	15800	.28	.15	.03	.01	.07	.18	.10	.08	.12
20...	1430	15700	.40	.33	.03	.00	.03	.36	.04	.03	.06
30...	1400	16300	.28	.13	.06	.00	.08	.19	.09	.08	.09
JUNE											
10...	1300	5800	--	.06	.01	.01	.12	.45	--	.13	.09
26...	1100	10300	--	.09	.03	.00	.10	.17	--	.10	.05
JULY											
08...	1000	12700	--	.11	.01	.01	.00	.12	--	.01	.03
22...	1100	11200	--	.17	.00	.01	.00	.17	--	.00	.07
AUG.											
05...	1030	30100	--	.30	.00	.00	.03	.30	--	.03	.07
19...	1030	11200	--	.01	.06	.00	.03	.05	--	.03	.02
30...	1015	9950	--	.05	.02	.00	.00	.07	--	.00	.03
SEP.											
10...	1015	2110	--	.10	.00	.00	.06	.30	--	.06	.01
20...	0930	20700	--	.10	.00	.00	.03	.30	--	.02	.02

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
OCT.											
04...	.05	2.0	.0	0	0	5	160	13	20	.1	20
12...	.05	1.5	.0	0	0	5	140	6	20	.0	40
19...	.10	1.5	.0	1	0	6	80	6	0	.0	30
26...	.05	2.0	.1	0	0	2	130	5	0	.0	10
NOV.											
02...	.05	3.0	.0	0	0	5	80	7	0	.0	20
05...	.06	2.5	.0	0	0	2	100	3	0	.1	30
15...	.06	2.0	.0	0	0	1	110	2	20	.1	30
20...	.06	3.7	.0	0	0	6	160	2	100	.0	20
30...	.06	1.2	.0	1	0	3	130	9	40	.0	100
DEC.											
07...	.06	2.0	.0	0	0	2	100	4	10	.0	20
12...	.06	2.2	.0	0	1	6	80	5	10	.0	20
18...	.05	1.1	.0	0	2	7	110	8	10	.0	20
27...	.07	2.9	.0	1	0	4	60	6	20	.0	30
JAN.											
03...	.04	1.3	.0	0	0	9	90	5	10	.0	30
10...	.03	1.5	.0	0	10	4	80	1	10	.0	20
19...	.00	1.0	.0	0	0	10	180	7	20	.0	10
25...	.04	1.5	.0	0	0	11	170	11	20	.0	10
31...	.04	1.4	.0	0	0	10	100	12	0	.0	30
FEB.											
07...	.03	1.1	.0	0	1	10	100	4	20	.0	20
13...	.04	1.5	.0	1	0	26	210	120	10	.0	250
22...	.05	1.3	.0	1	1	5	80	7	0	.0	10
27...	.04	1.6	.0	0	1	11	120	15	0	.0	20
MAR.											
07...	.05	2.8	.0	0	0	6	90	5	0	.0	30
15...	.04	2.0	.0	0	2	3	100	35	20	.0	30
22...	.03	1.7	.0	2	0	10	180	26	30	.0	130
28...	.03	1.5	.0	1	0	9	200	9	40	.0	20
APR.											
04...	.05	1.6	.0	0	0	5	170	9	60	.0	30
11...	.04	1.5	.0	0	0	5	150	10	30	.1	30
18...	.05	2.2	.0	1	0	5	130	15	60	.0	10
22...	.05	1.6	.0	10	<50	<10	90	<100	90	.0	40
MAY											
03...	.00	3.4	.0	1	0	13	160	40	40	.0	300
10...	.05	3.2	.0	0	<50	10	260	100	30	.0	230
17...	.06	2.7	.0	0	0	2	450	0	30	.2	60
20...	.04	3.1	.0	0	0	0	210	0	0	.0	30
30...	.05	3.2	.0	1	0	11	320	9	20	.0	60
JUNE											
10...	.05	2.6	--	--	--	--	230	<100	0	--	30
24...	.04	2.6	--	--	--	--	260	<100	0	--	20
JULY											
08...	.02	2.0	--	--	--	--	300	<100	10	--	30
22...	.01	2.1	--	--	--	--	440	<100	60	--	20
AUG.											
05...	.00	3.5	--	--	--	--	300	<100	0	--	20
19...	.01	3.0	--	--	--	--	160	<100	0	--	20
30...	.00	4.4	--	--	--	--	120	<100	0	--	0
SEP.											
10...	.00	1.6	--	--	--	--	110	<100	0	--	10
20...	.01	1.8	--	--	--	--	140	<100	0	--	10

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE DEG C)	TUR-BID-ITY (JTU)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)
OCT.									
04...	1700	13.4	19.0	2	227	13.1	135	7.4	95
12...	1030	13.3	7.5	1	244	12.9	132	7.3	96
19...	1030	13.3	-1.0	1	233	12.9	132	7.5	100
26...	1130	12.4	1.5	2	247	13.2	133	7.7	103
NOV.									
02...	1030	11.8	-3.0	2	249	13.3	133	7.9	103
05...	1000	11.3	-8.0	1	251	13.6	133	7.9	106
15...	1100	10.0	-2.0	3	252	13.0	124	7.9	105
20...	1100	9.5	-.5	3	247	13.4	125	7.8	105
30...	1700	8.1	3.0	3	261	15.0	136	7.9	105
DEC.									
07...	1430	7.6	3.0	1	268	15.0	135	7.7	109
12...	0800	7.1	1.0	1	265	14.0	125	7.8	113
18...	1130	6.8	3.5	1	244	16.2	143	8.1	107
27...	1015	6.0	-6.0	1	262	14.4	125	8.0	106
JAN.									
03...	1400	5.3	-13.0	1	247	16.8	142	8.0	106
10...	1430	4.7	-10.5	2	253	15.7	133	8.2	105
19...	1330	4.5	4.0	3	255	16.0	132	8.3	104
25...	1000	4.3	5.0	2	261	16.0	132	8.3	106
31...	1030	4.0	1.5	1	259	14.4	118	8.3	106
FEB.									
07...	1515	3.5	4.0	1	250	16.6	135	8.2	102
13...	1500	3.5	3.0	5	252	15.3	124	8.2	105
22...	1130	3.3	1.8	4	253	16.7	136	8.3	105
27...	0800	2.8	-1.0	2	263	16.1	130	8.2	110
MAR.									
07...	0930	2.5	-7.0	2	271	16.1	128	8.0	110
15...	0800	2.5	-2.0	2	267	16.3	129	8.1	111
22...	1500	2.8	5.0	2	274	17.0	137	8.0	114
28...	1500	3.4	8.0	1	270	17.7	144	8.1	111
APR.									
04...	1130	3.4	9.0	2	271	18.3	149	8.4	109
11...	0800	3.2	5.5	1	287	16.1	131	8.3	117
18...	0800	3.7	2.0	1	294	15.8	128	8.4	119
22...	1500	4.3	20.0	1	301	16.9	140	8.2	118
MAY									
03...	1430	6.3	22.0	3	300	16.0	140	8.4	118
10...	0745	6.2	4.5	3	292	15.2	132	8.2	116
17...	1310	7.0	12.0	5	259	16.6	137	8.4	108
20...	1630	8.3	21.0	3	268	15.0	138	8.4	110
30...	1400	8.7	9.0	4	252	14.6	134	8.3	104
JUNE									
10...	1300	9.5	20.5	3	270	13.0	130	8.2	101
24...	1100	9.3	30.0	7	270	13.6	128	8.0	98
JULY									
08...	1000	10.5	19.5	4	268	13.4	130	8.1	96
22...	1100	10.9	21.0	17	190	13.7	133	8.3	91
AUG.									
05...	1030	14.7	18.0	5	182	12.2	130	8.1	89
19...	1030	14.8	19.0	4	180	11.7	126	8.0	86
30...	1015	14.6	17.0	1	187	11.2	123	8.3	87
SEP.									
10...	1010	14.0	9.0	1	175	11.3	126	8.0	89
25...	0930	15.0	15.0	6	180	12.0	120	8.0	88

DATE	TIME	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	14.0	14.0	13.5	13.5	---	---	---	---	---	---	---	---
2	14.0	14.0	13.5	13.0	---	---	---	---	---	---	---	---
3	14.0	14.0	13.5	13.0	---	---	---	---	---	---	---	---
4	14.0	14.0	13.5	13.5	---	---	---	---	---	---	---	---
5	14.5	14.0	13.5	13.0	---	---	---	---	---	---	---	---
6	14.5	14.0	13.0	13.0	---	---	---	---	---	---	---	---
7	14.5	14.0	13.0	13.0	---	---	---	---	---	---	---	---
8	14.5	14.0	13.0	13.0	---	---	---	---	---	---	---	---
9	14.5	14.5	13.0	13.0	---	---	---	---	---	---	---	---
10	14.5	14.5	13.0	12.0	---	---	---	---	---	---	---	---
11	14.5	14.5	12.0	12.0	---	---	---	---	---	---	---	---
12	14.5	14.5	---	---	---	---	---	---	---	---	---	---
13	14.5	14.5	---	---	---	---	---	---	---	---	---	---
14	14.5	14.5	---	---	---	---	---	---	---	---	---	---
15	14.5	14.5	---	---	---	---	---	---	---	---	---	---
16	14.5	14.5	---	---	---	---	---	---	---	---	---	---
17	14.5	14.5	---	---	---	---	---	---	---	---	---	---
18	14.5	14.5	---	---	---	---	---	---	---	---	---	---
19	14.5	14.5	---	---	---	---	---	---	---	---	---	---
20	14.5	14.5	---	---	---	---	---	---	---	---	---	---
21	14.5	14.5	---	---	---	---	---	---	---	---	---	---
22	14.5	14.5	---	---	---	---	---	---	---	---	---	---
23	14.5	14.5	---	---	---	---	---	---	---	---	---	---
24	14.5	14.0	---	---	---	---	---	---	---	---	---	---
25	14.0	14.0	---	---	---	---	---	---	---	---	---	---
26	14.0	14.0	---	---	---	---	---	---	---	---	---	---
27	14.0	14.0	---	---	---	---	---	---	---	---	---	---
28	14.0	13.5	---	---	---	---	---	---	---	---	---	---
29	13.5	13.5	---	---	---	---	---	---	---	---	---	---
30	13.5	13.5	---	---	---	---	---	---	---	---	---	---
31	13.5	13.5	---	---	---	---	---	---	---	---	---	---
MONTH	14.5	13.5	---	---	---	---	---	---	---	---	---	---

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	---
23	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	---
24	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	---
25	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	---
26	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	---	---	[illegible]	[illegible]	---	---	[illegible]	[illegible]	[illegible]	[illegible]	---	---
MONTH	---	---	---	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]										

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE-DAILY MEASUREMENT)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	8.0	5.5	4.0	2.5	2.5	6.5	---	---	---	---
2	---	---	7.5	5.5	4.0	2.5	3.0	6.0	---	---	---	---
3	---	---	7.5	4.0	4.0	2.5	3.0	6.0	---	---	---	---
4	---	---	7.0	3.0	4.0	2.5	3.0	7.0	---	---	---	---
5	---	---	7.0	5.0	3.5	2.5	3.0	7.5	---	---	---	---
6	---	---	7.0	5.0	3.5	2.5	3.0	7.5	---	---	---	---
7	---	---	7.5	5.0	3.5	2.5	2.5	7.5	---	---	---	---
8	---	---	7.0	4.0	3.5	2.0	2.5	7.0	---	---	---	---
9	---	---	11.0	4.0	3.0	2.0	3.0	7.0	---	---	---	---
10	---	---	6.5	4.0	3.0	2.5	3.5	7.0	---	---	---	---
11	---	---	6.5	3.5	3.0	2.0	3.5	7.0	---	---	---	---
12	---	11.0	7.0	4.0	3.0	2.0	4.0	7.5	---	---	---	---
13	---	11.0	6.5	4.0	3.0	2.0	3.0	7.5	---	---	---	---
14	---	10.0	6.5	4.0	3.0	2.0	3.5	7.0	---	---	---	---
15	---	10.0	7.0	4.0	3.0	2.0	3.5	7.5	---	---	---	---
16	---	10.0	6.5	4.5	3.0	2.0	3.5	7.5	---	---	---	---
17	---	10.0	6.5	4.5	3.0	2.0	3.0	7.5	---	---	---	---
18	---	10.0	6.5	4.5	3.0	2.0	3.5	8.0	---	---	---	---
19	---	9.5	6.5	5.5	3.0	2.0	3.5	8.0	---	---	---	---
20	---	10.0	6.5	6.0	2.5	2.0	3.5	---	---	---	---	---
21	---	9.0	6.5	3.5	2.5	2.0	3.5	---	---	---	---	---
22	---	9.5	6.5	3.5	2.5	2.0	3.5	---	---	---	---	---
23	---	9.5	6.5	4.0	3.0	2.0	4.0	---	---	---	---	---
24	---	9.0	6.5	4.0	3.0	2.0	4.0	---	---	---	---	---
25	---	9.0	6.5	4.0	3.0	2.0	4.0	---	---	---	---	---
26	---	9.0	6.0	4.0	2.5	2.5	4.0	---	---	---	---	---
27	---	8.0	6.0	4.0	2.5	2.5	5.0	---	---	---	---	---
28	---	8.0	6.0	4.0	2.5	2.5	5.0	---	---	---	---	---
29	---	8.0	6.0	4.0	---	2.5	5.0	---	---	---	---	---
30	---	8.0	6.0	4.0	---	2.0	5.5	---	---	---	---	---
31	---	---	5.0	4.0	---	2.0	---	---	---	---	---	---
MONTH	---	---	7.0	4.5	3.0	2.0	3.5	---	---	---	---	---
YEAR	MAX	11.0	MIN	2.0	MEAN	5.0						

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	10300	8	222	7740	6	125	2670	7	50
2	10500	9	255	8250	6	134	2600	4	28
3	10600	10	286	10500	4	113	2640	7	50
4	10700	11	318	10400	2	56	2710	9	66
5	11600	7	219	10500	3	85	2690	9	65
6	10700	4	116	11200	3	91	2660	10	72
7	10600	5	143	10500	6	170	2660	3	22
8	10700	6	173	10400	7	197	2620	4	28
9	11400	4	123	10500	13	369	2580	6	42
10	11000	10	297	10900	2	59	2550	8	55
11	10700	10	289	11900	2	64	2520	6	41
12	10600	6	172	12200	4	132	2480	5	33
13	10600	6	172	9900	3	80	2420	6	39
14	10600	8	229	5790	4	63	2530	4	27
15	10600	8	229	5730	5	77	2680	7	51
16	10600	9	258	5040	3	41	2800	5	38
17	10600	6	172	2740	8	59	2670	7	50
18	10600	11	315	2670	10	72	2780	5	38
19	10500	8	227	2640	14	100	2780	6	45
20	10500	10	284	5100	6	83	2690	9	65
21	10500	7	198	8740	8	189	2690	4	29
22	10500	9	255	8460	6	137	2660	5	36
23	11700	10	316	8430	10	228	2630	3	21
24	10600	13	372	8440	8	182	2640	6	43
25	7470	10	202	8420	5	114	2640	6	43
26	7720	7	146	8820	3	71	2640	1	7.1
27	7730	5	104	9520	6	154	2630	1	7.1
28	7700	7	146	4230	6	69	2630	8	57
29	7700	7	146	2770	6	45	2640	3	21
30	7700	8	168	2720	4	29	2640	8	57
31	7700	7	146	--	--	--	2650	4	29
TOTAL	311100	--	6698	235150	--	3388	81820	--	1255.2

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2680	1	7.2	17600	2	95	18000	4	194
2	2680	3	22	17600	6	285	18000	3	146
3	2660	5	36	17100	6	[illegible]	17900	3	145
4	6390	6	104	17000	3	138	17700	3	143
5	14900	5	201	17000	5	230	16700	2	90
6	14900	2	80	17200	4	186	14300	2	77
7	14900	2	80	17600	4	190	14500	4	157
8	15000	2	81	18000	5	243	14700	2	79
9	15100	2	82	18300	4	198	14800	3	120
10	15000	2	81	18200	5	246	14800	2	80
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	--	--	--	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	--	--	--	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	--	--	--	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	--	[illegible]	[illegible]	--	[illegible]	[illegible]	--	[illegible]

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	4660	4	50	27000	6	437	15300	6	248
2	6210	2	34	27000	9	656	15300	6	248
3	6740	3	55	25500	10	689	15400	3	125
4	6690	2	36	23400	6	379	15500	7	293
5	6480	3	52	21700	8	469	15700	8	339
6	5800	1	16	20400	5	275	15900	4	172
7	5580	2	30	16100	8	348	15800	5	213
8	5490	2	30	11400	5	154	15700	6	254
9	5530	2	30	10900	7	206	15000	5	203
10	6610	2	36	10700	10	289	9440	4	102
11	7290	1	20	10500	10	284	15600	6	253
12	7370	2	40	10600	9	258	15500	5	209
13	7500	4	81	10500	7	198	15500	8	335
14	7580	3	61	12500	6	203	15800	4	171
15	8070	5	109	15400	8	333	15700	3	127
16	9700	4	105	15400	9	374	15800	2	85
17	12000	1	32	15500	8	335	15700	4	170
18	12300	2	66	15500	10	419	15600	3	126
19	11700	2	63	15500	8	335	15500	6	251
20	11600	2	63	15500	7	293	15600	8	337
21	11600	2	63	15500	6	251	15700	5	212
22	11700	1	32	15400	7	291	15700	5	212
23	12000	2	65	15400	9	374	15400	7	291
24	12600	2	68	15500	9	377	15400	7	291
25	15800	2	85	15700	7	297	18000	8	389
26	19200	3	156	15700	7	297	22900	12	742
27	23700	4	256	15800	8	341	28100	11	835
28	26200	6	424	16000	8	346	33200	11	986
29	26200	6	424	15700	7	297	36400	14	1380
30	26700	6	433	15900	8	343	36400	20	1970
31	--	--	--	15600	9	379	--	--	--
TOTAL	340600	--	3015	503200	--	10527	542540	--	11569

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	36100	28	2730	16300	9	396	8610	3	68
2	32900	13	1150	19100	7	362	8610	4	91
3	28000	13	983	16200	5	219	14500	4	157
4	25200	10	680	21500	5	290	19300	5	267
5	18900	13	663	25800	5	348	18600	8	397
6	16600	10	396	16300	5	220	18500	7	350
7	16300	9	367	9610	7	170	16800	8	320
8	13700	7	259	12500	6	203	7530	3	61
9	15500	7	293	16600	5	233	5800	10	157
10	16500	8	356	13600	6	217	5020	3	68
11	16100	9	391	13600	1	36	5020	8	120
12	15400	11	457	12000	3	97	5020	2	32
13	17900	14	677	11100	3	90	5020	3	68
14	16700	15	676	11600	2	62	6020	2	32
15	14000	15	567	11700	3	95	6060	2	26
16	17000	16	[illegible]	11500	2	62	[illegible]	2	[illegible]
17	[illegible]	13	[illegible]	11500	2	62	5030	2	31
18	[illegible]	14	[illegible]	11500	2	62	5030	2	31
19	[illegible]	15	[illegible]	11300	3	[illegible]	5030	2	31
20	[illegible]	10	[illegible]	11200	2	[illegible]	5030	2	31
21	[illegible]	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	3	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	--	--	--
TOTAL	[illegible]	--	[illegible]	[illegible]	--	[illegible]	[illegible]	--	[illegible]

[illegible]

[illegible]

12302055 FISHER RIVER NEAR LIBBY, MT.

LOCATION.--Lat 48°21'20", long 115°18'50", in NW¼NE¼NW¼ sec.21, T.30 N., R.29 W., Lincoln County, at bridge 0.2 mi (0.3 km) upstream from gaging station, 1 mi (1.6 km) upstream from mouth, and 11.6 mi (18.7 km) east of Libby.

DRAINAGE AREA.--838 mi² (2,170 km²), at gaging station.

PERIOD OF RECORD.--Chemical analyses: June to September 1967 (monthly), October 1967 to September 1969 (daily), October 1969 to September 1974 (monthly).
Water temperatures: September 1967 to September 1974.
Sediment records: September 1967 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 22.0°C Aug. 4; minimum, freezing point on several days during January.
Sediment concentrations: Maximum daily, 4,640 mg/l Jan. 16; minimum daily, 1 mg/l Dec. 12, Jan. 9, 12.
Sediment discharge: Maximum daily, 91,200 tons (82,700 tonnes) Jan. 16; minimum daily, 0.27 ton (0.24 tonne) Jan. 9.

Period of record:
Water temperatures: Maximum recorded, 25.0°C on several days during July and August, 1973; minimum, freezing point on many days during winter periods.
Sediment concentrations: Maximum daily, 4,640 mg/l Jan. 16, 1974; minimum daily, 1 mg/l on many days in 1967, 1969-74.
Sediment discharge: Maximum daily, 91,200 tons (82,700 tonnes) Jan. 16, 1974; minimum daily, 0.17 ton (0.15 tonne) Sept. 7, 9, 12, 14, 1973.

REMARKS.--Miscellaneous samples of chemical data published for June to September 1967. Temperature recorder at gaging station 0.2 mi (0.3 km) downstream from sampling site. Flow affected by ice during most of winter period. During periods of ice effect, sediment samples are taken in open channel. Flow affected by diversions for irrigation of about 700 acres (2.8 km²) upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.											
19...	1215	92	7.2	29	11	3.8	1.0	140	0	6.5	.6
NOV.											
20...	1230	249	9.4	17	6.3	2.3	.6	82	0	4.7	.8
DEC.											
11...	1530	204	11	19	7.2	2.6	.8	97	--	3.9	.7
JAN.											
25...	1230	1070	11	15	4.5	2.3	1.0	66	--	4.6	.4
FEB.											
22...	1000	348	11	21	7.9	3.0	1.0	102	--	6.0	1.0
MAR.											
22...	0800	720	15	20	6.2	3.1	1.2	88	--	6.4	.1
APR.											
22...	1330	2130	13	15	4.3	2.8	1.1	64	--	6.0	.8
MAY											
09...	1400	3270	11	11	2.9	2.0	.7	48	--	3.8	.1
JUNE											
10...	1430	1840	9.2	11	3.0	5.2	.7	47	0	5.7	.8
JULY											
08...	1130	583	8.8	17	4.9	1.8	.8	72	0	7.6	.6
AUG.											
05...	1230	226	9.9	22	6.9	2.7	.9	107	0	4.6	1.3
30...	1315	147	9.7	26	9.8	3.4	3.1	129	0	5.8	1.5

DATE	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED BORON (B) (UG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	TOTAL RESIDUE (MG/L)	COLOR (PLATINUM-COBALT UNITS)	CARBON DIOXIDE (CO2) (MG/L)
OCT.											
19...	.5	5	124	.17	30.8	120	3	.2	--	3	2.8
NOV.											
20...	.0	0	80	.11	59.4	68	1	.1	91	4	5.2
DEC.											
11...	.0	0	94	.13	50.6	77	0	.1	109	2	9.8
JAN.											
25...	.0	40	73	.10	211	56	2	.1	--	80	1.3
FEB.											
22...	.5	0	96	.13	70.8	86	1	.1	140	30	1.6
MAR.											
22...	.2	80	96	.13	190	75	3	.2	190	30	1.0
APR.											
22...	.2	40	87	.12	500	55	3	.2	850	40	1.3
MAY											
09...	.2	100	72	.10	636	40	0	.1	--	80	1.0
JUNE											
10...	.0	--	58	.08	270	40	1	.4	--	80	.8
JULY											
08...	.1	--	68	.09	100	63	4	.1	--	7	.9
AUG.											
05...	.1	--	97	.13	59.2	83	0	.1	--	1	.9
30...	.1	--	118	.16	46.8	105	0	.1	--	1	.8

12302055 FISHER RIVER NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)	DISSOLVED BERYLLIUM (BE) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	HEXAVALENT CHROMIUM (CR6) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.											
19...	1215	92	0	0	0	0	0	0	0	1	2
JAN.											
25...	1230	1070	20	0	0	0	0	0	0	0	4
MAY											
09...	1400	3270	20	0	200	10	0	20	0	0	3
JUNE											
10...	1430	1840	30	0	--	--	--	--	--	--	--
JULY											
08...	1130	583	20	3	--	--	--	--	--	--	--
AUG.											
05...	1230	226	0	5	--	--	--	--	--	--	--
30...	1315	147	10	0	--	--	--	--	--	--	--

DATE	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED LITHIUM (LI) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED MOLYBDENUM (MO) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED SILVER (AG) (UG/L)	DISSOLVED STRONTIUM (SR) (UG/L)	DISSOLVED VANADIUM (V) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.											
19...	20	1	0	0	.2	0	4	0	50	.0	40
JAN.											
25...	70	2	0	20	.0	0	2	0	40	.0	10
MAY											
09...	50	0	0	10	.0	0	0	0	100	.0	0
JUNE											
10...	50	0	--	--	--	2	--	--	--	--	20
JULY											
08...	70	2	--	20	--	0	--	--	--	--	0
AUG.											
05...	20	1	--	0	--	0	--	--	--	--	0
30...	10	2	--	0	--	0	--	--	--	--	20

DATE	TIME	TOTAL ALUMINUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL MOLYBDENUM (MO) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JUNE								
10...	1430	1300	2	3600	<100	60	0	40
JULY								
08...	1130	800	2	890	<100	10	0	30
AUG.								
05...	1230	300	5	200	<100	0	0	20
30...	1315	100	1	200	<100	0	0	10

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	TURBIDITY (JTU)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)
OCT.									
19...	1215	6.5	11.0	1	[illegible]	11.7	102	[illegible]	[illegible]
NOV.									
[illegible]	[illegible]	2.0	.5	[illegible]	[illegible]	[illegible]	102	[illegible]	[illegible]
DEC.									
[illegible]	[illegible]	1.0	1.0	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JAN.									
[illegible]	1230	2.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FEB.									
[illegible]	[illegible]	1.0	-1.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAR.									
[illegible]	[illegible]	.5	.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
APR.									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAY									
[illegible]	1400	7.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JUNE									
[illegible]	1430	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JULY									
[illegible]	1130	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AUG.									
[illegible]	1230	[illegible]	--	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1315	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

12302055 FISHER RIVER NEAR LIBBY, MT.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT. 19...	1215	92	.59	.45	.01	.00	.10	.40	.13
NOV. 20...	1230	249	.22	.13	.01	.01	.02	.14	.08
DEC. 11...	1530	204	.16	.11	.00	.00	.07	.11	.05
JAN. 25...	1230	1070	.58	.29	.06	.02	.10	.35	.03
FEB. 22...	1000	348	.36	.16	.12	.00	.03	.28	.08
MAR. 22...	0800	720	1.0	.69	.29	.02	.03	.90	.05
APR. 22...	1330	2130	.38	.19	.18	.00	.00	.37	.01
MAY 09...	1400	3270	.41	.20	.20	.00	.02	.40	.01
JUNE 10...	1430	1840	--	.72	.04	.01	.12	.78	--
JULY 08...	1130	583	--	.33	.07	.00	.00	.40	--
AUG. 05...	1230	226	--	.00	.07	.00	.08	.07	--
30...	1315	147	--	.40	.02	.00	.00	.42	--

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	CHLOROPHYLL A (UG/L)	CHLOROPHYLL B (UG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT. 19...	.10	.06	.01	3.0	.1	--	--	--
NOV. 20...	.03	.00	.03	--	.0	--	--	--
DEC. 11...	.07	.03	.02	--	.0	--	--	--
JAN. 25...	.12	.32	.01	6.0	.0	--	--	--
FEB. 22...	.03	.04	.00	--	.0	--	--	--
MAR. 22...	.05	.08	.01	--	.0	--	--	--
APR. 22...	.00	.09	.02	--	.0	--	--	--
MAY 09...	.02	.12	.00	7.[illegible]	.0	--	--	--
JUNE 10...	.13	.07	.01	2.[illegible]	--	.1	2.7	.7
JULY 08...	.00	.02	.01	8.[illegible]	--	.0	.0	1.6
AUG. 05...	.08	.03	.00	3.[illegible]	--	.6	.0	.3
30...	.00	.04	.00	4.[illegible]	--	.6	.8	.7

SUSPENDED-SEDIMENT FOR SELECTED DAYS, WATE YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPERATURE (DEG C)	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	[illegible]	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100

12302055 FISHER RIVER NEAR LIBBY, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	13.5	9.5	6.0	5.0	4.0	3.5	0.5	0.0	2.5	0.5	3.5	2.5
2	11.0	8.0	5.0	2.0	4.0	3.5	0.0	0.0	2.5	2.0	4.0	3.0
3	10.0	6.0	2.5	1.0	4.0	3.0	0.0	0.0	2.5	2.5	4.0	2.0
4	10.0	6.0	2.0	1.0	3.5	2.5	0.0	0.0	3.0	2.5	3.0	2.0
5	10.0	6.0	1.0	1.0	2.5	1.5	0.0	0.0	3.0	2.5	3.5	3.0
6	9.5	7.5	1.0	1.0	2.0	1.0	0.0	0.0	3.0	2.0	3.5	1.5
7	9.5	8.0	1.0	1.0	2.5	2.0	0.0	0.0	2.0	1.0	2.0	0.5
8	9.0	6.0	2.0	1.0	2.5	1.5	0.0	0.0	2.0	1.5	3.0	1.0
9	8.0	4.5	2.5	1.5	1.5	1.0	0.0	0.0	2.0	1.0	3.5	0.5
10	7.0	4.5	4.0	2.5	1.0	1.0	0.0	0.0	2.5	1.0	4.0	1.5
11	6.5	5.0	4.0	4.0	1.5	1.0	0.0	0.0	2.5	1.0	4.5	3.0
12	8.0	6.5	4.5	4.0	3.0	1.5	0.0	0.0	2.5	1.0	5.0	3.0
13	8.0	7.5	4.5	4.0	4.0	3.0	0.0	0.0	2.5	2.0	4.5	3.5
14	10.5	7.0	4.5	4.0	3.0	3.0	0.0	0.0	3.0	2.0	4.5	2.0
15	10.0	8.0	4.0	3.0	3.5	3.0	0.0	0.0	3.0	2.0	3.5	2.0
16	10.5	7.0	4.0	3.0	4.0	3.0	1.0	0.0	3.0	2.5	3.5	2.0
17	10.0	6.5	4.0	3.0	4.0	3.5	2.0	1.0	3.0	2.5	4.5	3.5
18	10.0	6.5	3.0	2.0	3.5	3.0	2.0	2.0	3.0	2.5	3.5	2.0
19	8.5	6.5	3.0	2.0	3.0	3.0	2.5	2.0	3.0	2.0	3.5	2.5
20	8.0	7.0	2.5	2.0	3.0	2.5	2.5	1.5	3.0	1.5	2.5	0.5
21	9.0	7.5	2.5	2.0	3.5	2.5	1.5	1.0	2.0	1.0	2.0	1.5
22	10.5	8.5	2.5	2.0	4.0	3.5	1.5	1.0	3.0	1.5	3.0	0.5
23	9.5	9.0	2.5	1.0	4.0	3.5	2.5	1.5	2.5	1.0	3.5	1.0
24	9.0	8.0	2.0	1.5	3.5	2.5	2.0	2.0	2.0	1.0	4.0	3.0
25	8.5	7.5	2.0	1.5	2.5	2.0	2.0	2.0	2.0	1.0	4.5	3.0
26	8.0	5.5	2.5	2.0	2.0	1.0	2.0	2.0	4.0	2.0	6.5	4.0
27	7.0	5.5	2.0	1.5	2.0	1.5	2.0	2.0	4.0	2.5	6.0	4.5
28	7.0	6.0	4.0	2.0	2.0	1.5	2.0	2.0	3.5	2.0	5.5	4.5
29	7.5	6.0	4.0	3.5	1.5	1.0	2.0	2.0	---	---	4.5	4.0
30	7.5	6.5	4.0	3.5	1.0	0.5	2.0	1.0	---	---	4.0	3.0
31	7.0	6.0	---	---	0.5	0.5	1.0	0.5	---	---	4.5	3.0
MONTH	13.5	4.5	6.0	1.0	4.0	0.5	2.5	0.0	4.0	0.5	6.5	0.5

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.0	3.0	7.5	6.5	10.5	8.0	16.0	14.0	21.5	16.5	17.0	12.5
2	4.5	3.5	7.0	5.0	11.0	9.0	15.5	13.5	20.0	17.0	16.5	10.5
3	5.0	4.0	8.0	5.5	11.0	9.0	15.0	13.0	20.5	16.5	17.0	10.5
4	5.0	4.0	9.0	6.0	10.0	8.0	15.0	13.5	22.0	16.0	16.0	11.5
5	5.0	4.0	9.0	7.0	9.5	7.5	14.0	12.5	21.5	16.5	16.5	12.0
6	6.5	5.0	9.0	7.5	9.5	8.0	16.0	12.0	20.0	17.0	17.5	12.5
7	6.0	4.5	8.5	7.0	9.0	8.0	16.5	14.0	18.0	14.0	17.0	12.0
8	5.5	4.0	8.5	6.0	10.0	8.0	15.5	13.5	16.5	14.0	15.0	12.5
9	5.5	5.0	8.5	6.0	11.0	8.0	14.5	13.5	17.0	12.0	14.0	12.5
10	6.0	5.0	8.0	6.5	11.5	8.5	16.0	14.0	16.0	13.0	14.5	12.0
11	6.0	5.0	7.5	6.0	12.0	9.0	15.5	14.5	18.0	13.0	13.5	11.5
12	5.5	4.5	7.5	6.5	12.0	9.0	15.5	12.5	17.0	13.5	13.0	9.0
13	6.0	4.5	7.5	6.0	12.5	9.0	18.0	13.5	17.0	14.0	13.5	8.0
14	6.5	4.0	8.0	6.5	12.5	9.0	20.0	15.0	17.0	13.5	14.5	9.0
15	7.0	5.0	8.0	6.5	13.0	9.5	19.5	17.0	17.0	13.0	14.5	10.0
16	7.0	6.0	7.5	6.0	13.0	10.0	19.0	15.0	18.5	12.5	14.5	9.5
17	6.5	4.5	7.0	6.0	13.0	10.0	18.5	15.5	19.5	13.5	15.0	10.0
18	6.5	5.0	7.5	6.5	13.0	10.0	20.0	16.0	17.0	14.0	14.5	10.0
19	7.0	5.5	9.5	7.0	13.5	10.0	20.0	17.0	17.5	15.0	15.0	11.0
20	7.0	6.0	9.5	8.0	13.5	11.0	20.0	16.5	19.0	14.5	14.5	10.0
21	7.0	5.0	9.5	8.5	14.0	10.0	19.0	15.0	19.0	13.5	14.0	9.0
22	6.5	5.0	11.5	9.0	14.0	11.5	18.5	15.0	17.5	13.0	14.0	9.5
23	8.0	6.0	11.5	9.0	15.5	12.5	19.5	15.0	17.0	14.0	14.0	9.0
24	8.5	7.0	10.0	9.0	16.0	13.0	19.5	15.5	18.0	13.0	14.0	9.5
25	8.0	6.0	9.5	8.0	16.0	12.5	19.0	15.0	19.5	14.0	14.5	9.5
26	7.0	6.0	9.5	8.0	15.5	12.5	20.0	16.5	20.0	16.0	13.0	10.5
27	6.0	5.5	10.0	7.0	16.5	12.0	20.0	15.0	20.5	16.5	11.5	9.5
28	6.5	5.5	10.0	7.0	15.0	12.0	21.0	15.5	20.0	16.5	13.0	10.0
29	7.5	6.0	9.5	7.5	15.5	12.5	21.0	16.0	20.0	16.5	12.0	9.0
30	7.5	6.5	9.5	6.0	16.5	13.0	21.5	16.5	19.0	16.5	11.5	7.0
31	---	---	10.0	8.0	---	---	21.0	17.0	17.0	16.0	---	---
MONTH	8.5	3.0	11.5	5.0	16.5	7.5	21.5	12.0	22.0	12.0	17.5	7.0
YEAR	22.0	0.0										

12302055 FISHER RIVER NEAR LIBBY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCTOBER MEAN DISCHARGE (CFS)	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER SEDIMENT DISCHARGE (TONS/DAY)	NOVEMBER MEAN DISCHARGE (CFS)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER SEDIMENT DISCHARGE (TONS/DAY)	DECEMBER MEAN DISCHARGE (CFS)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER SEDIMENT DISCHARGE (TONS/DAY)
1	90	6	1.5	121	3	.98	221	7	4.2
2	88	5	1.2	115	4	1.2	217	5	2.9
3	88	5	1.2	108	5	1.5	210	5	2.8
4	88	7	1.7	108	4	1.2	207	7	3.9
5	88	7	1.7	112	5	1.5	194	7	3.7
6	88	4	.95	112	4	1.2	187	4	2.0
7	88	4	.95	110	7	2.1	184	4	2.0
8	90	2	.49	104	4	1.1	206	3	1.7
9	88	6	1.4	113	4	1.2	194	6	3.1
10	88	9	2.1	173	21	12	190	4	2.1
11	90	5	1.2	414	73	89	202	11	6.0
12	91	5	1.2	846	192	439	202	1	.55
13	97	5	1.3	654	55	97	196	5	2.6
14	99	6	1.6	453	18	22	196	3	1.6
15	96	7	1.8	362	13	13	189	9	4.6
16	94	3	.76	367	12	12	211	10	5.7
17	94	7	1.8	396	13	14	442	46	58
18	94	7	1.8	322	7	6.1	502	34	46
19	93	6	1.5	278	5	3.8	451	18	22
20	93	12	3.0	247	7	4.7	410	10	11
21	94	13	3.3	229	5	3.1	384	9	9.3
22	94	5	1.3	212	4	2.3	365	10	9.9
23	95	6	1.5	194	3	1.6	347	8	7.5
24	98	5	1.3	186	4	2.0	327	6	5.3
25	107	6	1.7	179	2	.97	321	5	4.3
26	112	10	3.0	174	10	4.7	292	4	3.2
27	109	2	.59	165	5	2.2	285	6	4.6
28	107	8	2.3	173	7	3.3	273	4	2.9
29	123	2	.66	232	12	7.5	256	3	2.1
30	136	7	2.6	237	6	3.8	243	2	1.3
31	125	5	1.7	--	--	--	223	4	2.4
TOTAL	3025	--	49.10	7496	--	756.05	8325	--	239.25

DAY	JANUARY MEAN DISCHARGE (CFS)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY SEDIMENT DISCHARGE (TONS/DAY)	FEBRUARY MEAN DISCHARGE (CFS)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY SEDIMENT DISCHARGE (TONS/DAY)	MARCH MEAN DISCHARGE (CFS)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH SEDIMENT DISCHARGE (TONS/DAY)
1	164	5	2.2	648	74	129	347	33	31
2	158	2	.81	616	86	143	356	36	35
3	140	3	1.1	576	68	106	347	28	26
4	130	2	.70	571	72	111	334	20	18
5	130	3	1.1	565	64	97	364	27	27
6	120	3	.97	513	58	80	381	62	63
7	120	2	.65	478	48	62	330	33	29
8	110	2	.59	474	45	58	343	35	32
9	100	1	.27	450	41	50	316	23	19
10	110	3	.89	431	42	49	330	26	23
11	90	2	.49	417	36	41	326	24	21
12	110	1	.30	412	37	41	336	29	26
13	150	3	1.2	412	34	38	377	63	64
14	250	150	101	399	30	32	381	35	36
15	1500	1760	7130	390	26	27	385	36	37
16	7200	4660	91200	381	29	30	396	57	61
17	6950	3370	62700	377	28	28	400	150	162
18	4220	1680	19100	360	29	28	654	225	397
19	3240	985	8620	377	25	25	762	225	463
20	2500	730	5100	364	26	26	762	120	247
21	1900	600	2500	334	27	24	736	109	217
22	1500	390	1600	367	26	26	712	78	150
23	1300	267	940	324	22	19	671	72	130
24	1190	223	716	324	20	17	660	67	119
25	1130	207	632	319	19	16	625	61	103
26	1020	189	521	318	19	16	883	80	190
27	801	140	305	330	21	19	920	157	390
28	636	120	206	325	21	18	1100	374	1110
29	800	137	296	--	--	--	1430	566	2190
30	750	126	253	--	--	--	1760	601	2860
31	671	99	179	--	--	--	1900	420	2150
TOTAL	40648	--	202102.27	11807	--	1552	19964	--	18300

12302055 FISHER RIVER NEAR LIBBY, MT.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	1740	214	1010	2860	303	2340	1810	97	474
2	1630	167	735	2890	276	2150	1830	143	707
3	1530	191	789	2520	200	1360	2110	232	1320
4	1450	127	497	2280	192	1180	2330	262	1650
5	1380	117	436	2350	229	1450	2260	206	1260
6	1420	119	456	2780	295	2210	1980	149	797
7	1500	127	514	3190	457	3940	1870	132	666
8	1510	124	506	3400	590	5420	1830	120	593
9	1560	126	531	3330	434	3900	1790	111	536
10	1610	147	639	2880	304	2360	1820	117	575
11	1800	230	1120	2400	215	1390	1900	183	939
12	1960	256	1350	2110	184	1050	2100	291	1650
13	1830	173	855	1880	169	858	2290	376	2320
14	1740	151	709	1650	138	615	2370	378	2420
15	1770	193	922	1500	121	490	2350	321	2040
16	1930	426	2220	1350	95	346	2480	499	3340
17	2050	228	1260	1240	85	285	2390	396	2560
18	2110	219	1250	1200	85	275	2230	303	1820
19	2170	248	1450	1130	77	235	2050	243	1350
20	2310	274	1710	1050	69	196	1960	218	1150
21	2280	247	1520	1020	71	196	1740	173	813
22	2130	204	1170	1080	73	213	1530	159	657
23	2110	179	1020	1220	97	320	1440	143	556
24	2450	375	2480	1370	120	444	1420	146	560
25	3530	1050	10000	1540	191	794	1320	125	446
26	3830	817	8450	1940	315	1650	1190	114	366
27	3400	508	4660	2290	392	2420	995	92	247
28	3050	475	3910	2260	259	1580	876	81	192
29	2710	332	2430	2090	173	976	820	82	182
30	2570	264	1830	2020	141	769	787	73	155
31	--	--	--	1950	117	616	--	--	--
TOTAL	63060	--	56429	62770	--	42028	53868	--	32341

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	--	[illegible]	[illegible]	--	[illegible]	[illegible]	--	[illegible]

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) [illegible]
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) [illegible]

12323800 CLARK FORK NEAR GALEN, MT.

LOCATION.--Lat 46°12'30", long 112°46'00", in NE¼NE¼NE¼ sec.7, T.5 N., R.9 W., Deer Lodge County, on upstream side of county bridge, 1.6 mi (2.6 km) downstream from Warm Springs Creek, 1.9 mi (3.1 km) southeast of Galen, and at mile 481.9 (775.4 km).

DRAINAGE AREA.--793 mi² (2,054 km²).

PERIOD OF RECORD.--Chemical analyses: July 1971 to December 1973 (discontinued).

REMARKS.--Water discharge values are from streamflow measurements or computed from upstream streamflow stations. Flow affected by mining operations upstream from station.

CHEMICAL ANALYSES, OCTOBER TO DECEMBER 1973

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
OCT.											
24...	1500	108	270	25	27	740	14	1.6	1240	1.69	362
DEC.											
18...	1230	96	220	22	21	580	11	1.2	973	1.32	253

DATE	HARDNESS (CA,MG) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT.										
24...	780	.4	.11	1.1	.57	.56	.00	.06	.10	3.1
DEC.										
18...	640	.4	.60	1.9	.67	1.2	.03	.05	.07	3.0

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT.										
24...	1500	7.5	14.5	1460	11.4	119	7.6	44	1300	130
DEC.										
18...	1230	1.5	.0	1240	12.0	108	7.9	84	590	340

12331600 CLARK FORK AT DRUMMOND, MT.

LOCATION.--Lat 46°39'45", long 113°08'57", in SE¼NW¼SE¼ sec.31, T.11 N., R.12 W., Granite County, at bridge on old U.S. Highway 10A, 0.4 mi (0.6 km) southwest of Drummond, 0.9 mi (1.4 km) downstream from Flint Creek, and at mile 417.0 (671 km).

DRAINAGE AREA.--2,378 mi² (6,159 km²).

PERIOD OF RECORD.--Chemical analyses: July 1971 to December 1973 (discontinued).

REMARKS.--Flow affected by irrigation and mining operations upstream from station.

CHEMICAL ANALYSES, OCTOBER TO DECEMBER 1973

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
OCT.											
24...	1000	428	93	18	19	150	7.7	.6	418	.57	482
DEC.											
18...	0930	420	90	16	17	170	6.9	.6	427	.58	565

DATE	HARDNESS (CA,MG) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
OCT.										
24...	310	.5	.00	.58	.03	.55	.07	.10	.14	1.8
DEC.										
18...	290	.4	.41	.75	.45	.30	.05	.07	.07	1.5

DATE	TIME	TEMPERATURE (DEG C)	AIR TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	PH (UNITS)	ALKALINITY AS CACO3 (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT.										
24...	1000	6.5	9.5	652	10.5	99	7.8	184	450	75
DEC.										
18...	0930	2.5	-3.0	644	11.2	98	7.8	142	230	42

12334650 BLACKFOOT RIVER BELOW ALICE CREEK, NEAR LINCOLN, MT.

LOCATION.--Lat 46°59'21", long 112°30'40", in SE¼SE¼SW¼ sec.5, T.14 N., R.7 W., Lewis and Clark County, at gaging station at road bridge 0.4 mi (0.6 km) upstream from mouth of Hogum Creek, 3.0 mi (4.8 km) downstream from Alice Creek, and 8.2 mi (13.2 km) northeast of Lincoln.

DRAINAGE AREA.--96.9 mi² (251 km²).

PERIOD OF RECORD.--Chemical analyses: October 1970 to June 1974 (discontinued).
Water temperatures: October 1970 to September 1974.
Sediment records: October 1970 to September 1973.

EXTREMES.--1973-74:
Water temperatures: Maximum, 20.0°C Aug. 5; minimum, freezing point on many days during January to March.

Period of record:
Water temperatures: Maximum, 23.0°C July 10, 1973; minimum, freezing point on many days during winter periods.

REMARKS.--Abandoned mining dumps present in drainage area. No regulation or diversion of flow upstream from station.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO JUNE 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DISSOLVED ALUMINUM (AL) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BARIUM (BA) (UG/L)	DISSOLVED BERYLLIUM (BE) (UG/L)	DISSOLVED BORON (B) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
APR. 11...	0925	83	1.5	20	2	0	0	7	0	0	0	2
JUNE 05...	0900	349	6.5	10	1	100	0	190	0	0	0	2

DATE	DISSOLVED IRON (FE) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED MOLYBDENUM (MO) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	DISSOLVED SILVER (AG) (UG/L)	DISSOLVED STRONTIUM (SR) (UG/L)	DISSOLVED VANADIUM (V) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
APR. 11...	70	1	0	9.0	.0	0	0	2	1	70	.2	30
JUNE 05...	20	0	0	7.8	.0	0	9	1	0	90	.0	50

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	8.5	3.5	1.0	4.0	1.5	0.5	0.5	---	---	1.5	0.5
2	10.5	6.0	2.0	0.5	3.5	1.5	0.5	0.5	---	---	1.0	0.0
3	10.0	5.0	1.0	0.5	2.0	1.0	0.5	0.5	---	---	0.0	0.0
4	10.5	6.0	0.5	0.5	1.5	0.5	0.5	0.5	---	---	0.0	0.0
5	9.0	4.5	1.0	0.5	1.0	0.5	0.5	0.5	---	---	0.0	0.0
6	10.0	5.0	0.5	0.5	1.5	0.5	0.5	0.5	---	---	0.0	0.0
7	8.0	5.5	0.5	0.0	3.5	1.5	0.5	0.5	---	---	0.0	0.0
8	8.5	4.5	2.0	0.5	3.0	1.0	0.5	0.5	---	---	0.0	0.0
9	9.5	4.5	4.5	2.0	1.0	0.5	0.5	0.0	---	---	0.0	0.0
10	8.0	3.0	5.0	3.5	1.0	0.5	0.5	0.5	---	---	0.5	0.0
11	8.5	5.0	5.0	3.5	3.0	1.0	0.5	0.5	1.5	0.0	1.5	0.0
12	8.0	6.0	4.5	3.5	3.0	1.0	0.5	0.0	2.0	0.5	2.0	0.0
13	8.5	5.5	4.0	2.0	2.0	1.0	0.0	0.0	1.5	0.5	2.0	0.0
14	10.5	7.0	3.0	1.5	1.5	1.0	0.0	0.0	2.0	0.5	2.0	0.0
15	8.5	6.0	4.0	1.5	3.0	1.5	0.0	0.0	3.0	0.5	2.0	0.0
16	10.0	5.5	4.5	3.0	3.5	2.0	0.0	0.0	3.0	1.0	5.0	1.5
17	9.5	5.0	3.5	1.5	3.5	1.5	0.0	0.0	3.0	0.5	4.5	1.5
18	9.5	5.0	2.0	1.0	3.0	1.0	0.0	0.0	2.0	0.5	3.5	0.5
19	9.5	5.0	3.0	1.0	1.5	1.0	0.5	0.0	2.0	0.5	1.5	0.5
20	8.5	5.0	1.5	1.0	1.5	1.0	0.0	0.0	1.5	0.5	0.5	0.0
21	9.0	6.0	3.0	1.0	3.5	1.5	0.0	0.0	0.5	0.0	0.5	0.0
22	9.0	5.0	3.5	1.5	3.5	1.5	---	---	0.5	0.0	1.5	0.0
23	8.0	6.0	2.0	1.0	3.0	1.5	---	---	0.5	0.0	1.5	0.0
24	8.0	6.0	3.0	1.0	2.0	1.5	---	---	0.5	0.0	4.0	0.0
25	6.5	4.5	1.5	0.5	1.0	0.5	---	---	0.0	0.0	4.5	0.0
26	5.5	3.5	1.5	1.0	0.5	0.5	---	---	1.0	0.0	5.5	1.5
27	6.0	3.5	2.0	1.0	0.5	0.5	---	---	1.0	0.0	5.0	1.0
28	6.5	3.5	3.5	2.0	0.5	0.5	---	---	1.0	0.0	5.0	1.5
29	5.5	4.0	3.5	3.0	0.5	0.5	---	---	---	---	3.5	1.5
30	4.5	4.0	3.5	2.0	0.5	0.5	---	---	---	---	4.5	1.5
31	4.0	1.0	---	---	0.5	0.5	---	---	---	---	4.5	1.5
MONTH	10.5	1.0	5.0	0.0	4.0	0.5	---	---	---	---	5.5	0.0

12334650 BLACKFOOT RIVER BELOW ALICE CREEK, NEAR LINCOLN, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.0	1.0	8.5	6.0	10.5	5.5	17.0	10.5	18.5	10.0	11.5	9.0
2	6.0	1.5	8.5	4.5	11.5	7.0	15.0	10.5	18.5	9.5	15.5	6.5
3	7.0	1.5	9.0	4.5	12.0	8.0	16.0	9.0	18.5	9.0	15.5	8.0
4	5.5	1.5	10.0	6.0	---	---	17.0	9.5	19.0	9.5	14.0	8.0
5	6.0	2.0	11.0	6.0	9.5	6.5	13.5	10.5	20.0	10.0	14.0	8.5
6	4.0	2.0	10.0	8.0	9.5	6.5	17.0	10.0	13.5	10.5	14.5	8.5
7	6.0	1.0	9.0	6.5	8.0	6.0	17.0	11.0	18.0	10.5	15.5	8.0
8	6.5	1.5	9.5	6.5	9.5	6.0	15.5	10.0	12.0	10.0	14.5	8.5
9	6.5	3.0	9.0	6.5	11.0	5.5	15.5	10.5	15.0	9.5	14.0	8.5
10	4.0	3.0	7.0	4.0	10.5	6.5	16.0	10.0	15.5	8.5	10.5	9.0
11	5.0	3.0	7.0	4.0	13.5	7.0	14.5	10.0	15.5	10.0	9.0	6.5
12	4.0	2.0	5.5	4.0	15.0	9.5	16.0	8.5	15.5	9.0	11.5	6.0
13	5.5	2.0	5.5	3.0	15.0	9.5	18.0	8.5	11.5	10.0	12.0	4.5
14	7.0	2.0	6.0	3.0	15.5	10.0	19.0	9.5	13.0	9.5	13.5	5.5
15	6.5	2.0	5.5	3.0	16.5	10.5	17.0	10.5	15.5	8.5	13.5	5.5
16	5.5	2.0	6.0	2.0	15.5	11.0	18.5	10.0	16.5	8.0	13.5	5.5
17	6.0	1.5	4.5	3.5	16.5	11.0	18.5	9.5	18.0	9.0	14.0	5.5
18	6.0	2.0	5.5	3.5	16.5	11.0	17.0	9.5	18.0	9.0	13.5	5.5
19	6.0	3.5	5.5	3.5	15.5	11.0	18.5	10.0	15.0	10.0	13.5	7.0
20	5.0	3.0	4.0	2.0	15.5	11.5	19.0	10.0	12.0	10.0	13.0	6.0
21	4.5	3.0	5.5	1.0	15.0	11.0	19.0	9.0	16.0	9.5	13.0	5.5
22	6.5	3.0	9.5	3.5	16.5	10.5	18.0	9.5	15.0	9.0	13.0	5.0
23	8.5	4.5	9.0	5.0	18.0	11.0	18.5	10.0	17.0	9.0	12.0	5.5
24	9.0	5.0	9.0	5.5	18.5	11.5	19.0	9.5	18.0	10.0	12.0	5.0
25	8.5	4.5	9.5	6.5	19.0	12.0	19.0	10.0	18.0	10.0	12.0	5.0
26	8.0	4.5	10.5	7.0	17.0	11.5	19.0	8.5	17.0	10.0	12.0	6.0
27	6.0	3.5	10.0	7.0	17.0	10.5	18.0	9.5	19.5	10.0	7.0	5.5
28	5.5	3.0	10.0	6.5	17.0	10.5	19.5	9.0	17.0	15.5	9.0	4.5
29	8.0	4.0	9.0	6.5	16.5	10.5	19.5	10.0	18.5	9.5	10.0	5.0
30	8.5	4.5	7.0	5.0	18.5	10.5	17.0	10.5	14.5	10.5	9.5	4.5
31	---	---	8.0	5.0	---	---	19.5	9.5	12.0	10.0	---	---
MONTH	9.0	1.0	11.0	1.0	19.0	5.5	19.5	8.5	20.0	8.0	15.5	4.5
YEAR	20.0	0.0										

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT.

LOCATION.--Lat 47°58'45", long 113°33'36", in NE¼NW¼NE¼ sec.36, T.26 N., R.16 W., Flathead County, Flathead National Forest, temperature recorder at gaging station on left bank 0.1 mi (0.2 km) downstream from Tin Creek, 0.4 mi (0.6 km) upstream from Twin Creek, 36.3 mi (58.4 km) southeast of Hungry Horse, and at mile 46.7 (75.1 km).

DRAINAGE AREA.--1,160 mi² (3,004 km²).

PERIOD OF RECORD.--Water temperatures: May 1965 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 15.0°C Aug. 1, 4, 5, 27, 28; minimum, freezing point Feb. 11-13, 21.

Period of record:
Water temperatures: Maximum, 19.5°C Aug. 3, 4, 1973; minimum, freezing point on many days during winter periods most years.

REMARKS.--Temperature recorder inoperative Dec. 11 to Feb. 10, Mar. 23 to Apr. 21, May 12-21. No regulation of flow upstream from station.

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.5	9.5	4.0	3.0	2.5	2.0	---	---	---	---	1.0	0.5
2	9.5	7.5	3.0	2.0	2.5	2.0	---	---	---	---	1.5	1.0
3	8.0	6.5	2.0	1.0	2.0	1.5	---	---	---	---	1.0	0.5
4	7.5	5.5	1.0	1.0	1.5	1.0	---	---	---	---	0.5	0.5
5	7.5	5.5	1.0	1.0	1.0	1.0	---	---	---	---	1.0	0.5
6	7.0	5.5	1.0	0.5	1.0	1.0	---	---	---	---	0.5	0.5
7	7.5	6.5	0.5	0.5	1.0	1.0	---	---	---	---	1.0	0.5
8	7.5	6.0	0.5	0.5	1.5	1.0	---	---	---	---	1.0	0.5
9	6.5	5.0	0.5	0.5	1.0	1.0	---	---	---	---	1.0	0.5
10	5.5	4.5	1.5	0.5	1.0	1.0	---	---	---	---	1.5	0.5
11	5.5	5.0	2.5	1.0	---	---	---	---	0.5	0.0	1.5	0.5
12	5.5	5.5	3.0	2.5	---	---	---	---	0.5	0.0	1.5	0.5
13	5.5	5.5	3.0	3.0	---	---	---	---	0.5	0.0	1.5	1.0
14	7.5	5.5	3.0	3.0	---	---	---	---	1.0	0.5	2.5	1.0
15	7.5	6.5	3.0	3.0	---	---	---	---	1.5	1.0	1.0	1.0
16	7.5	7.0	3.5	3.0	---	---	---	---	1.5	1.0	2.0	1.0
17	7.5	5.5	3.5	2.5	---	---	---	---	1.5	1.0	3.0	2.0
18	7.5	6.0	2.5	1.5	---	---	---	---	1.5	1.0	3.0	1.5
19	7.0	5.5	1.5	1.5	---	---	---	---	1.5	1.0	2.0	0.5
20	6.5	6.0	1.5	1.0	---	---	---	---	1.0	0.5	1.5	0.5
21	7.0	6.0	1.0	1.0	---	---	---	---	1.0	0.0	1.0	0.5
22	7.5	6.0	1.5	1.0	---	---	---	---	0.5	0.5	1.5	0.5
23	7.0	6.5	1.5	1.0	---	---	---	---	1.0	0.5	---	---
24	6.5	6.5	1.0	1.0	---	---	---	---	1.0	0.5	---	---
25	6.5	6.0	1.0	1.0	---	---	---	---	1.0	0.5	---	---
26	6.0	5.5	1.0	1.0	---	---	---	---	0.5	0.5	---	---
27	6.0	5.5	1.0	1.0	---	---	---	---	1.0	0.5	---	---
28	6.0	5.0	1.5	1.0	---	---	---	---	0.5	0.5	---	---
29	6.0	5.5	2.0	1.5	---	---	---	---	---	---	---	---
30	6.0	5.5	2.0	1.5	---	---	---	---	---	---	---	---
31	5.5	4.0	---	---	---	---	---	---	---	---	---	---
MONTH	10.5	4.0	4.0	0.5	---	---	---	---	---	---	---	---

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	6.0	4.0	6.5	4.5	9.0	7.0	15.0	13.0	11.5	9.5
2	---	---	5.0	4.0	6.5	5.0	9.0	7.0	14.5	13.0	11.0	8.5
3	---	---	5.5	4.0	6.5	4.5	8.5	7.0	14.0	13.0	11.5	8.5
4	---	---	6.0	4.0	5.5	4.5	9.0	7.5	15.0	13.0	11.5	9.0
5	---	---	6.0	4.5	5.5	4.5	9.0	8.0	15.0	13.0	12.0	9.5
6	---	---	5.5	4.5	5.5	4.5	9.5	7.5	14.0	12.0	12.5	9.5
7	---	---	5.0	4.0	5.5	4.5	9.5	8.5	13.0	11.0	12.5	9.5
8	---	---	5.5	4.0	5.5	4.5	9.5	8.5	12.0	11.0	12.0	10.0
9	---	---	5.0	4.0	6.5	4.5	9.5	8.5	12.0	10.0	11.5	10.5
10	---	---	4.5	4.0	6.5	4.5	8.5	8.5	11.5	10.5	11.0	10.0
11	---	---	4.5	4.0	7.0	5.0	8.5	7.5	12.5	10.0	10.0	9.0
12	---	---	---	---	7.0	5.0	9.0	7.5	12.0	10.0	10.0	7.5
13	---	---	---	---	7.0	5.0	10.0	8.5	11.5	10.0	10.0	7.5
14	---	---	---	---	7.0	5.5	11.0	9.5	10.5	9.0	11.0	8.0
15	---	---	---	---	7.0	5.5	11.0	10.0	12.0	9.5	11.5	9.0
16	---	---	---	---	7.0	5.5	11.0	10.0	13.0	10.0	11.5	9.0
17	---	---	---	---	7.0	5.5	11.0	10.0	13.5	10.5	12.0	9.0
18	---	---	---	---	7.0	5.5	11.5	10.0	13.5	11.0	12.0	9.0
19	---	---	---	---	6.5	5.0	12.5	10.5	12.0	11.5	12.0	10.0
20	---	---	---	---	6.0	5.0	12.5	11.5	11.5	10.5	12.0	9.5
21	---	---	---	---	6.5	5.5	12.5	10.5	13.0	11.0	11.0	8.5
22	5.0	4.0	7.0	5.5	7.0	5.5	12.0	10.0	13.0	10.0	11.0	8.5
23	6.5	4.5	6.5	5.5	7.5	6.0	12.0	11.0	13.5	11.0	11.0	8.5
24	6.0	4.0	6.0	5.5	7.5	6.0	12.0	10.5	13.5	10.5	11.5	9.0
25	5.0	3.5	6.0	5.0	7.5	6.0	12.0	11.0	14.0	11.0	11.5	9.0
26	5.0	3.5	6.0	5.0	7.5	6.0	12.0	11.0	14.0	11.5	11.0	9.5
27	3.5	3.5	6.0	4.0	7.0	5.5	12.5	11.0	15.0	12.0	10.0	9.0
28	5.0	3.5	5.5	4.0	8.0	6.0	13.5	11.5	15.0	12.5	9.5	8.5
29	5.5	4.5	5.5	4.5	8.0	6.5	14.0	12.0	14.5	11.5	10.0	8.0
30	6.0	4.5	5.5	4.0	8.5	7.0	14.5	13.0	13.5	12.0	10.0	7.5
31	---	---	5.5	4.5	---	---	14.5	13.0	13.0	11.0	---	---
MONTH	---	---	---	---	8.5	4.5	14.5	7.0	15.0	9.0	12.5	7.5
YEAR	15.0	0.0										

12389000 CLARK FORK NEAR PLAINS, MT.

LOCATION.--Lat 47°25'47", long 114°51'18", E½SW¼ sec.1, T.19 N., R.26 W., Sanders County, temperature recorder at gaging station 2.4 mi (3.9 km) southeast of Plains, 6.0 mi (9.7 km) downstream from Flathead River, and at mile 239.0 (384.6 km).

DRAINAGE AREA.--19,958 mi^2 (51,691 km^2).

PERIOD OF RECORD.--Chemical analyses: July 1969 to June 1970.
Water temperatures: November 1968 to September 1974.

EXTREMES.--1973-74:
Water temperatures: Maximum, 24.0°C Aug. 1; minimum, 0.5°C January 13-17.

Period of record:
Water temperatures: Maximum, 24.0°C Aug. 3, 1973, Aug. 1, 1974; minimum, freezing point on many days during winter periods most years.

REMARKS.--Flow affected by reservoirs and diversions for irrigation upstream from station.

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	13.5	13.0	7.0	6.0	3.5	3.5	2.0	1.0	2.5	2.0	3.5	3.0
2	13.0	11.0	6.0	5.0	3.5	3.5	1.0	1.0	2.5	2.5	3.5	3.5
3	11.0	10.0	5.0	4.0	3.5	3.5	1.0	1.0	2.5	2.5	3.5	3.0
4	10.5	9.5	4.0	3.0	3.5	3.5	1.0	1.0	2.5	2.5	3.0	2.5
5	10.0	9.0	3.0	2.5	3.5	3.0	1.0	1.0	2.5	2.5	3.0	3.0
6	9.5	9.0	3.0	2.0	3.0	3.0	1.0	1.0	2.5	2.0	3.0	2.5
7	9.5	9.0	2.5	2.0	3.0	3.0	1.0	1.0	2.0	2.0	2.5	2.0
8	9.5	8.5	2.5	2.5	3.0	3.0	1.0	1.0	2.0	2.0	2.5	2.0
9	9.0	8.0	2.5	2.0	3.0	2.5	1.0	1.0	2.5	2.0	2.5	2.5
10	8.5	8.0	3.5	2.5	2.5	2.0	1.0	1.0	2.5	2.5	3.0	2.5
11	9.0	8.5	4.0	3.5	2.0	2.0	1.0	1.0	2.5	2.5	3.5	3.0
12	9.0	8.5	4.0	4.0	2.5	2.0	1.0	1.0	2.5	2.0	4.0	3.5
13	9.0	8.5	4.0	4.0	3.0	2.5	1.0	0.5	2.5	2.0	4.0	4.0
14	9.5	8.5	4.0	4.0	3.0	3.0	0.5	0.5	2.5	2.5	4.0	3.5
15	10.0	9.0	4.0	4.0	3.0	3.0	0.5	0.5	3.0	2.5	4.0	4.0
16	10.0	9.5	4.0	4.0	3.5	3.0	0.5	0.5	3.0	3.0	4.0	3.5
17	10.0	9.5	4.0	4.0	3.5	3.5	1.0	0.5	3.0	3.0	4.5	4.0
18	10.0	9.5	4.0	3.5	4.0	3.5	1.5	1.0	3.0	3.0	4.5	4.5
19	10.0	9.5	3.5	3.0	4.0	3.5	2.0	1.5	3.0	3.0	4.5	4.0
20	10.0	9.5	3.0	2.5	3.5	3.5	2.0	2.0	3.0	2.5	4.0	3.5
21	9.5	9.0	3.0	3.0	3.5	3.5	2.0	2.0	2.5	2.5	3.5	3.5
22	9.5	9.0	3.0	3.0	3.5	3.5	2.0	2.0	2.5	2.5	3.5	3.0
23	9.5	9.5	3.0	2.5	4.0	3.5	2.0	2.0	2.5	2.5	3.5	3.0
24	9.5	9.0	2.5	2.5	4.0	3.5	2.0	2.0	2.5	2.0	3.5	3.5
25	9.0	8.5	2.5	2.5	3.5	3.0	2.5	2.0	2.5	2.0	4.5	3.5
26	8.5	8.0	2.5	2.5	3.0	3.0	2.5	2.5	2.5	2.5	5.0	4.5
27	8.5	8.0	2.5	2.5	3.0	3.0	2.5	2.5	3.0	2.5	5.5	5.0
28	8.5	8.0	3.0	2.5	3.0	2.5	2.5	2.5	3.0	2.5	6.5	5.5
29	8.0	8.0	3.5	3.0	2.5	2.5	2.5	2.5	---	---	6.5	6.5
30	8.0	7.5	3.5	3.5	2.5	2.5	2.5	2.5	---	---	6.5	6.0
31	7.5	7.0	---	---	2.5	2.0	2.5	2.0	---	---	6.0	5.5
MONTH	13.5	7.0	7.0	2.0	4.0	2.0	2.5	0.5	3.0	2.0	6.5	2.0

12389000 CLARK FORK NEAR PLAINS, MT.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(CONTINUOUS THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.5	5.5	8.5	8.0	12.5	12.0	17.5	17.0	24.0	23.5	20.0	19.5
2	5.5	5.5	8.0	7.5	13.0	12.5	17.5	17.0	23.5	23.5	19.5	18.5
3	5.5	5.5	8.0	7.5	13.0	13.0	17.5	16.5	23.5	23.0	19.0	18.0
4	5.5	5.5	8.0	7.5	13.0	12.5	17.5	17.0	23.0	22.5	19.0	18.0
5	6.0	5.5	9.0	8.0	12.5	12.0	17.5	17.0	23.5	22.5	18.5	18.5
6	6.5	6.0	9.5	9.0	12.0	11.5	18.0	17.0	23.5	22.0	19.0	18.5
7	6.5	6.5	9.0	8.5	11.5	11.0	18.0	17.5	22.0	20.5	19.0	18.0
8	6.5	6.5	8.5	8.0	11.0	10.5	18.5	18.0	20.5	19.5	18.5	18.0
9	7.0	6.5	8.5	8.0	11.5	10.5	18.0	17.5	20.0	18.5	18.5	17.5
10	7.0	7.0	8.5	8.0	12.0	11.5	17.5	17.5	20.5	19.0	17.5	16.5
11	7.0	7.0	8.0	8.0	13.0	12.0	17.5	17.5	20.5	19.5	16.5	15.5
12	7.0	7.0	8.0	7.5	13.5	13.0	17.5	17.5	20.5	19.5	15.5	14.5
13	7.0	6.5	7.5	7.0	14.0	13.5	17.5	17.5	20.0	19.0	15.5	14.0
14	7.0	6.5	7.5	7.5	15.0	14.0	18.0	17.5	19.5	18.5	15.5	14.0
15	7.5	7.0	7.5	7.0	15.5	15.0	18.0	17.5	19.0	18.5	16.0	15.0
16	8.0	7.5	7.5	7.0	16.0	15.5	18.0	17.0	19.5	18.5	16.5	15.5
17	8.0	7.5	7.5	7.0	17.5	16.0	19.0	18.0	19.5	19.0	16.5	15.0
18	8.0	7.5	7.5	7.0	18.0	17.5	20.0	19.0	19.5	19.5	16.5	16.0
19	8.0	7.5	8.0	7.5	18.0	18.0	21.0	20.0	19.5	19.0	16.5	16.0
20	8.0	7.5	8.5	8.0	18.0	17.5	21.5	21.0	19.0	19.0	17.0	16.0
21	8.0	7.5	9.0	8.0	17.5	17.0	21.5	21.0	19.0	18.5	16.5	16.0
22	7.5	7.0	9.0	9.0	18.0	17.5	21.5	21.0	19.0	18.5	16.5	15.5
23	7.5	7.0	9.5	9.0	18.0	18.0	21.5	21.0	19.5	19.0	16.0	16.0
24	8.5	7.5	9.5	9.0	19.0	18.0	21.5	21.0	19.5	19.0	16.0	16.0
25	9.0	8.5	10.0	9.5	19.0	19.0	21.5	21.0	20.0	19.0	16.0	16.0
26	9.0	8.5	10.5	10.0	19.0	18.5	21.5	21.0	20.5	19.5	16.0	15.5
27	8.5	7.5	11.0	10.5	19.0	19.0	22.0	21.5	20.5	20.0	15.5	14.0
28	7.5	7.0	11.0	11.0	19.0	18.5	22.0	21.5	21.0	20.0	14.0	13.5
29	7.0	7.0	11.0	11.0	18.5	17.0	22.5	22.0	21.5	20.0	14.0	13.0
30	8.0	7.0	11.0	11.0	18.0	16.5	23.0	22.5	21.5	20.5	14.0	13.0
31	---	---	12.0	11.0	---	---	23.5	23.0	21.0	20.0	---	---
MONTH	9.0	5.5	12.0	7.0	19.0	10.5	23.5	16.5	24.0	18.5	20.0	13.0
YEAR	24.0	0.5										

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD WATER-QUALITY STATIONS

MARIAS RIVER BASIN

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
06091852 - MISSION LAKE NR BLACKFOOT, MT. (LAT 48 33 48 LONG 112 37 49)												
OCT., 1973 02...	1345	10.5	2.7	10	0	36	31	55	2.6	145	0	200
APR., 1974 30...	1705	9.5	1.5	50	10	44	31	53	2.6	178	0	200
MAY 31...	0840	10.0	2.0	10	20	47	32	53	2.7	186	0	200
JULY 06...	0815	16.5	2.8	10	0	45	30	57	2.9	181	1	190
AUG. 07...	1015	20.0	2.5	0	20	41	34	58	3.4	171	0	210
SEP. 06...	1015	15.0	3.0	20	0	39	34	61	2.8	164	4	220

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
OCT., 1973 02...	3.7	.3	.01	.01	411	.56	220	85	1.6	657	8.0
APR., 1974 30...	3.5	.2	.02	.01	424	.58	240	92	1.5	693	8.3
MAY 31...	3.8	.2	.01	.02	433	.59	250	97	1.5	683	8.3
JULY 06...	4.8	.2	.12	.03	424	.58	240	86	1.6	700	8.4
AUG. 07...	3.6	.2	.04	.01	437	.59	240	100	1.6	700	--
SEP. 06...	3.8	.3	.04	.00	449	.61	240	96	1.7	707	--

MILK RIVER BASIN

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
06133500 - N F MILK RIVER AB ST MARY CA, NR BROWNING, MT. (LAT 48 58 15 LONG 113 03 19)												
OCT., 1973 15...	1620	11	6.0	9.1	80	54	22	7.8	1.3	280	6	5.0
06134000 - NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY (LAT 49 01 19 LONG 112 58 16)												
OCT., 1973 15...	1750	11	5.5	8.8	30	50	23	9.7	1.3	270	5	6.5
06135000 - MILK RIVER AT EASTERN CROSSING OF INT BOUNDARY (LAT 48 59 05 LONG 110 20 15)												
OCT., 1973 31...	1700	16	3.0	3.4	20	48	25	92	2.5	302	8	150
06149500 - BATTLE CREEK AT INTERNATIONAL BOUNDARY (LAT 49 00 08 LONG 109 25 20)												
NOV., 1973 01...	1130	5.4	1.5	.4	30	33	55	130	18	233	13	350

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
06133500 - N F MILK RIVER AB ST MARY CA, NR BROWNING, MT. (LAT 48 58 15 LONG 113 03 19)												
OCT., 1973 15...	1.0	.1	.01	.02	238	.32	7.13	230	0	.2	420	8.4
06134000 - NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY (LAT 49 01 19 LONG 112 58 16)												
OCT., 1973 15...	.8	.1	.03	.02	238	.32	7.13	220	0	.3	421	8.4
06135000 - MILK RIVER AT EASTERN CROSSING OF INT BOUNDARY (LAT 48 59 05 LONG 110 20 15)												
OCT., 1973 31...	6.6	.2	.03	.01	485	.66	20.8	220	0	2.7	782	8.5
06149500 - BATTLE CREEK AT INTERNATIONAL BOUNDARY (LAT 49 00 08 LONG 109 25 20)												
NOV., 1973 01...	9.8	.6	.94	.00	735	1.00	10.7	310	96	3.2	1150	8.8

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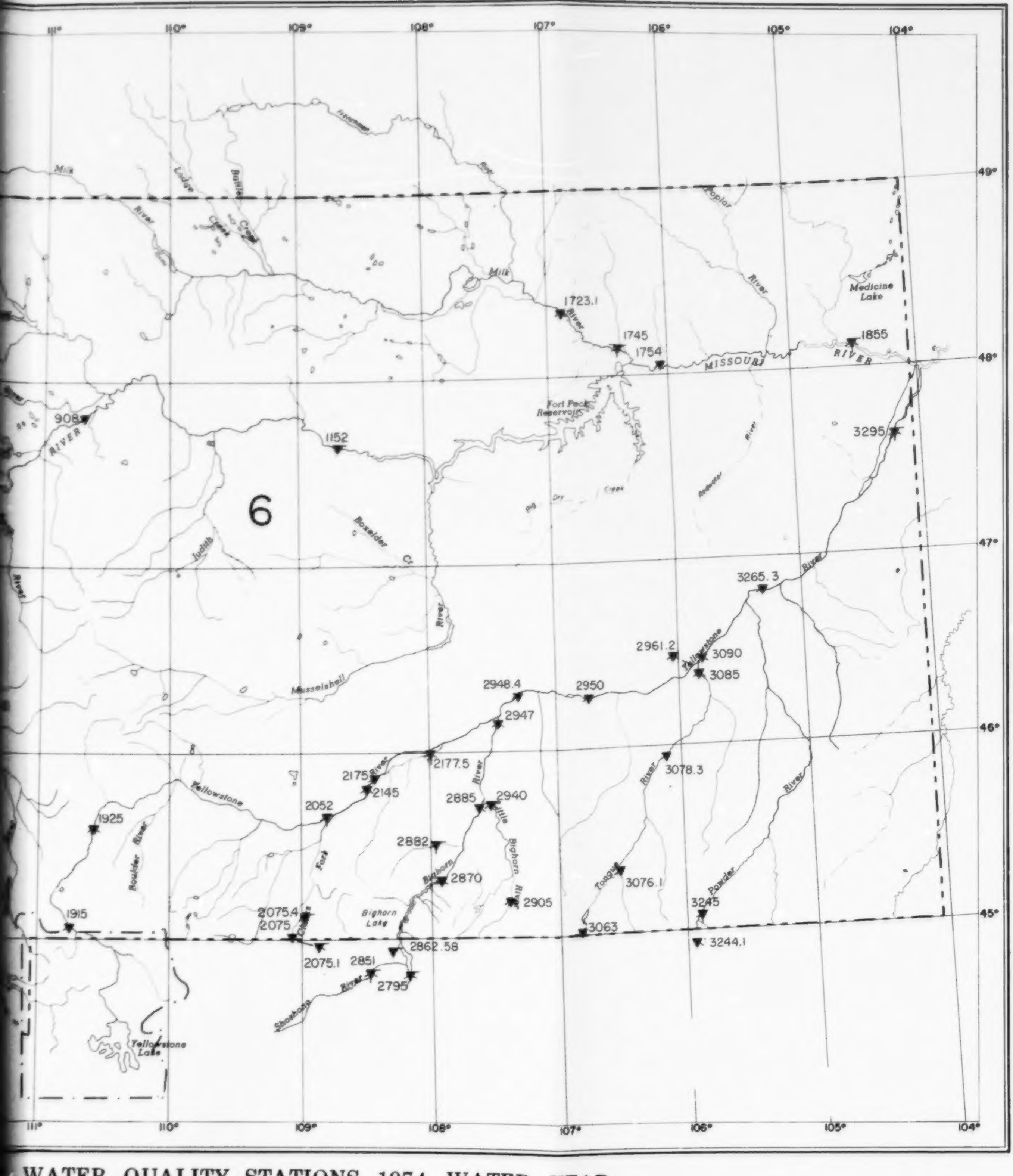

111°
110°
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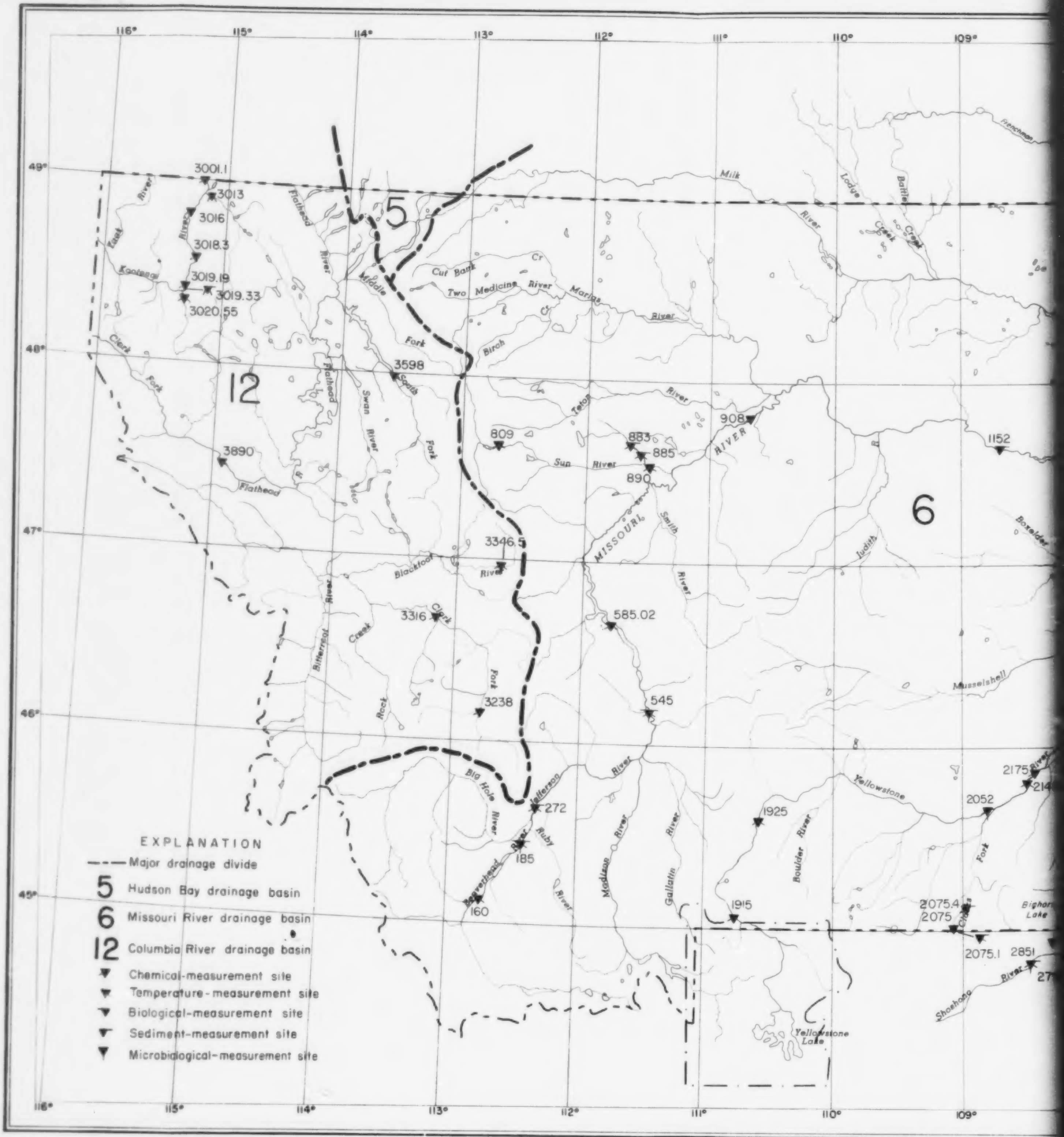
108°
107°
106°
105°
104°
49°
48°
47°
46°
45°
Frenchman
River
Milk
River
Lodge
Creek
Battle
Creek
Milk
River
Poplar
River
Medicine
Lake
1723.1
1745
1754
1855
MISSOURI
RIVER
Fort Peck
Reservoir
908
RIVER
1152
3295
Redwater
River
Big
Dry
Creek
6
Boxelder
Ct.
Judith
River
River
Musselshell
3265.3
River
2961.2
Yellowstone
3090
3085
2948.4
2950
2947
46°
2177.5
2175
River
2145
River
Yellowstone
2052
2885
2940
Little
Bighorn
River
River
3078.3
Tongue
River
Powder
River
1925
Boulder
River
Fork
2882
Bighorn
2870
2905
3076.1
3245
Bighorn
Lake
1915
2075.4
2075
Clarks
2075.1
2851
2862.58
3063
3244.1
2795
Shoshone
River
Yellowstone
Lake

WATER QUALITY STATIONS, 1974 WATER YEAR


116°
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6
12
3001.1
3013
3016
3018.3
3019.19
3019.33
3020.55
3598
3890
809
883
885
890
908
1152
3346.5
3316
585.02
3238
545
272
185
160
1925
1915
2175
2052
2075.4
2075
2075.1
2851
Kootenai
River
Flathead
Middle
Fork
South
Swan River
Cut Bank
Cr
Two Medicine River
Marias
Birch
Teton
Milk
Lodge
Creek
Battle
Creek
Frenchman
Sun River
RIVER
MISSOURI
Smith
River
Judith
Boxelder
Blackfoot
Clark
Fork
Bitterroot
Rock
Creek
Big Hole
River
Jefferson
Ruby
Beaverhead
Madison
Gallatin
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